Space: Is It Worth the Cost? • The Bright Side of Nuclear Power

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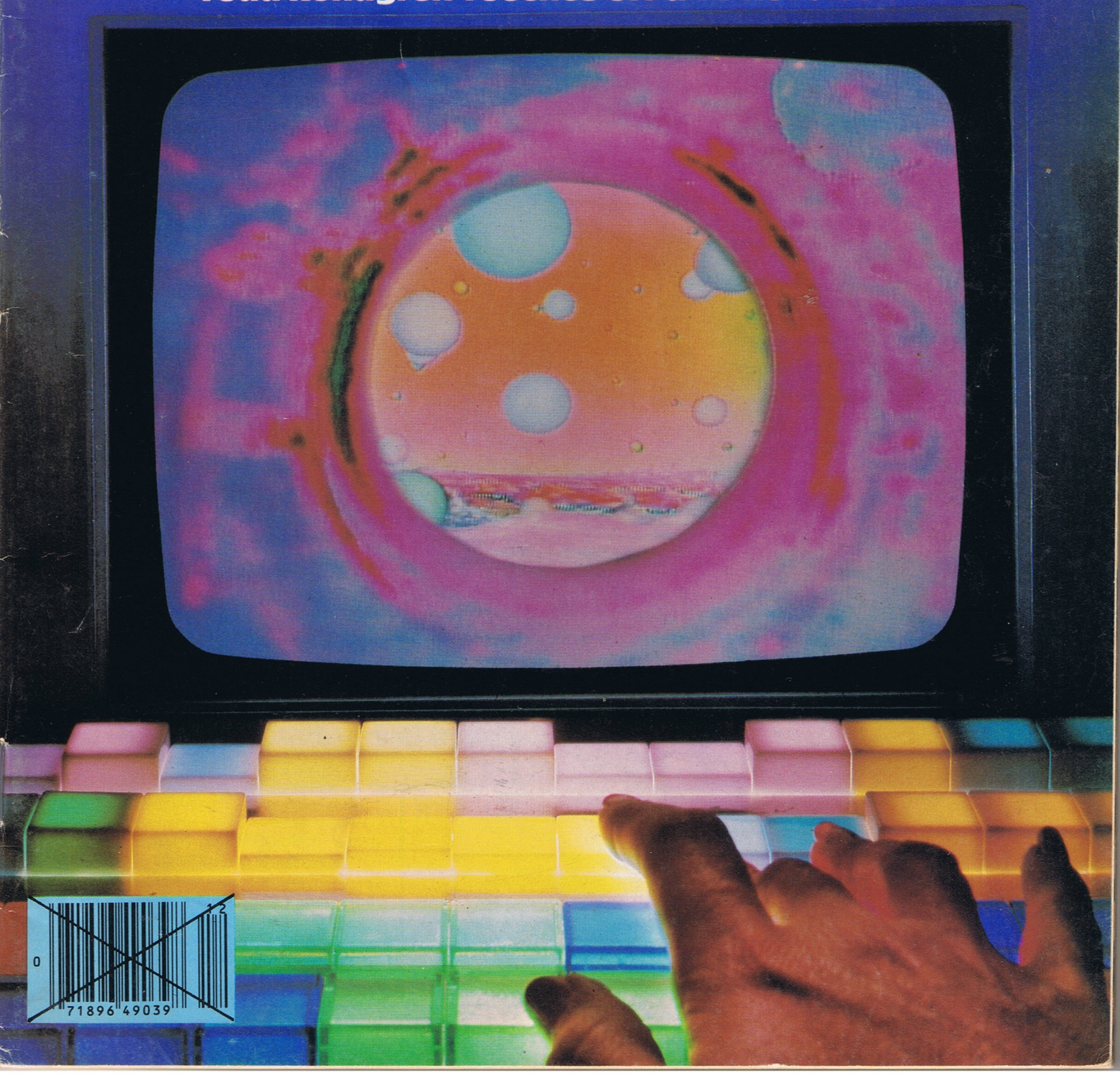
#23
DEC. 1980

UTOPIA VIDEO

Todd Rundgren Touches Off a TV Revolution



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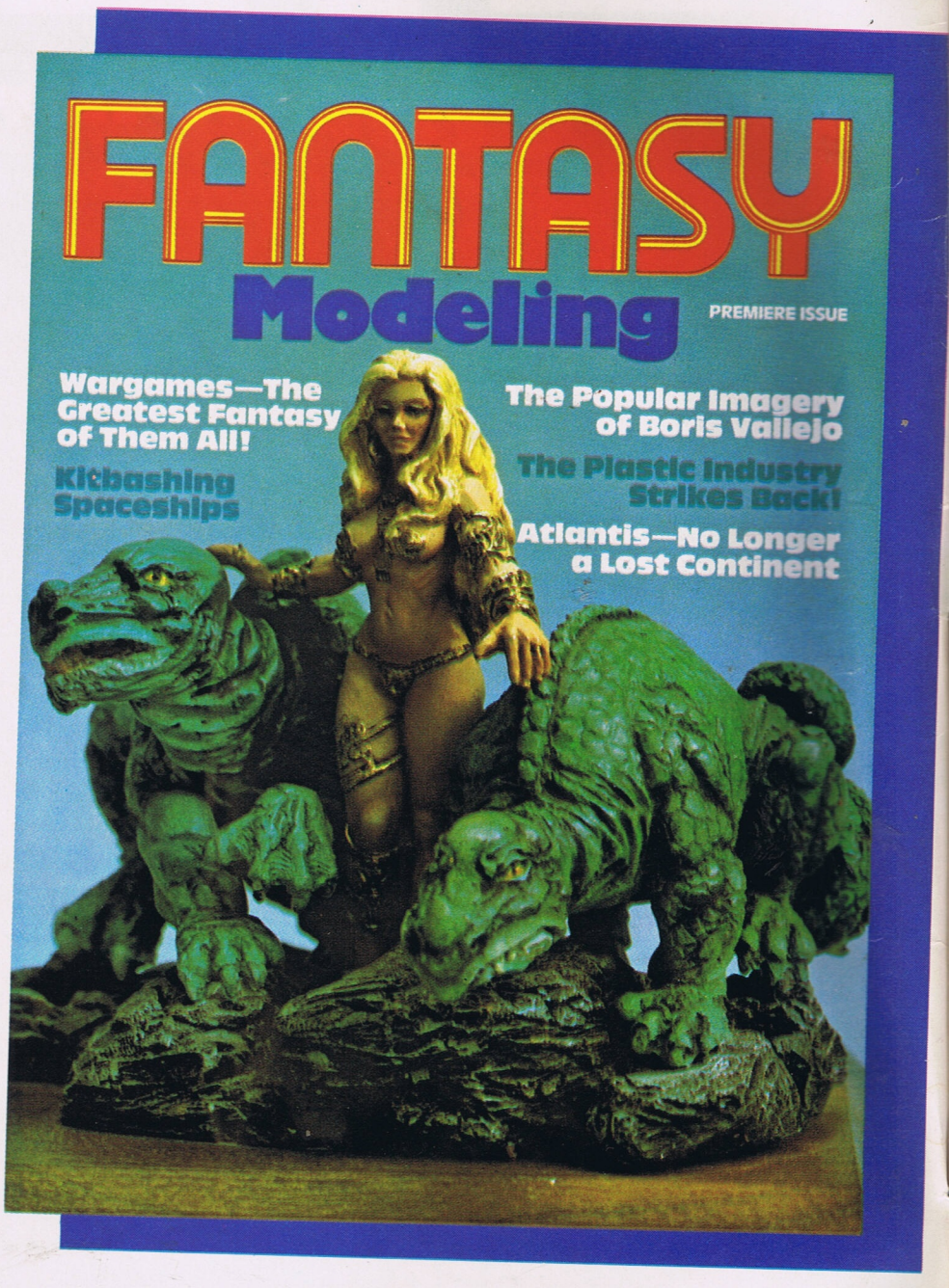

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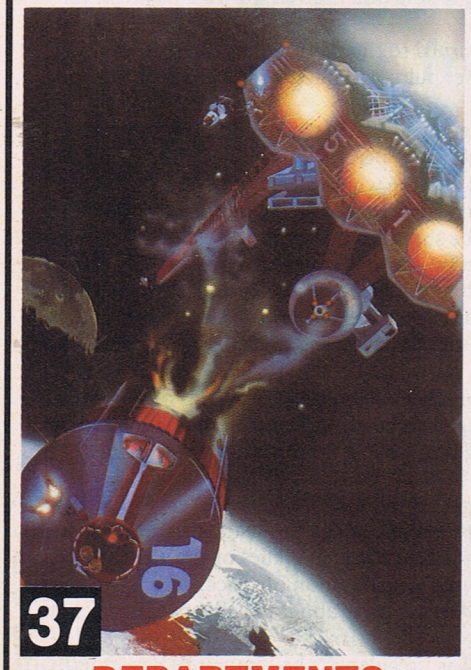

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FUTURE LIFE

DECEMBER 1980 #23

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ON THE COVER: Tomorrow's television fare may be quite different than today's. For more on video possibilities, see page 14. Video image by Todd Rundgren, photographed by Elliot Landy; cover photography by Michael Sullivan.

IMPORTANT

This is the last issue of FUTURE LIFE that you can purchase at a newsstand.

Let me explain. . .

Each time I am a guest at a science fiction convention and people have the opportunity to ask me questions about the workings of the publishing business, they are always *astonished* to learn certain facts about magazine distribution via newsstands. For example:

(1) It takes between six months and a full year from the time an issue goes on sale until the publisher is told the final count of magazines sold and is given the final payment (or *loss* statement) for that issue.

(2) Unsold copies of a magazine are not returned to the publisher; they are shredded by the local wholesale warehouse and sold as paper pulp, without a penny going to the publisher.

(3) On the average, 50 percent or more of each issue of *all* newsstand magazines are unsold and end up shredded. We estimate that about 25 percent of all magazines are never put onto the stands at all, but go immediately into the wholesalers' shredders.

(4) Every magazine purchased at a newsstand is paying the price, not just for that copy, but also for the thousands of copies that will be shredded into pulp.

(5) The costs of paper, printing and production for magazines has risen steadily (like everything else in times of high inflation), with approximately a 10 percent increase to us every three months. That's 10 percent of the already-increased prices. Since paper and printing are the main expenses of publishing, unsold newsstand copies are a gigantic waste and a crucial problem for publishers.

Now, every publisher who ever lived has complained about the problems of newsstand distribution, but like death and taxes, there seems to be no way of eliminating the evils of the system. The only choice seems to be "love it or leave it"—especially for the *small publisher.*

And that means us.

FUTURE LIFE is a very specialized magazine. It appeals not to the mainstream public but to those individuals with a unique idealism about the possibilities of the world of tomorrow—people with a healthy obsession for the exploration of space, with a lively interest in the drama of science fiction, with a keen curiosity about the advances of science and technology.

Most FUTURE LIFE readers are subscribers or "regulars;" the "impulse" newsstand sales are minimal. Which all means our steady readers are paying for tens of thousands of newsstand copies that are printed and wasted.

Therefore, we have made a radical decision regarding this magazine—a decision that will reserve the income of the magazine for more productive, creative uses. Starting with the next issue of FUTURE LIFE (#24) *we will no longer distribute on newsstands.*

I hasten to add that the magazine will continue to be available at Waldenbooks and science fiction specialty shops in the U.S., and at the same quality magazine counters around the world. All the familiar places—but no newsstands.

Mainly, FUTURE LIFE will now be a subscription magazine.

If *you* are a regular newsstand reader of FUTURE LIFE, then you are part of an important movement to change the world for the better. Subscribe and continue the drive. We will continue sending you the kind of colorful, informative view of the future that has become the banner of this magazine.

Please take a moment *right now* to fill out the subscription form on the facing page, and we will guarantee that you will not miss the next exciting issue of FUTURE LIFE.

Issue #24 will be packed with an extravagant line-up of glorious space art, news and book reviews, interviews and thought-provoking features (see Next Issue, last page). In fact, you can now look forward to a magazine that is even more beautiful and inspiring than ever.

It could be that FUTURE LIFE is being true to its name by making a move that, for other specialized magazines, will be the trend of tomorrow.

Kerry O'Quinn/Publisher

FUTURE LIFE is published eight times a year or every seven weeks by Future Magazine, Inc. 475 Park Avenue, South, New York, N.Y. 10016 (ISSN 0191 2909) This is issue Number 23, December 1980, Volume Three. FUTURE LIFE accepts no responsibility for unsolicited manuscripts, photos, art or other materials, but if freelance submittals are accompanied by a self-addressed, stamped envelope they will be considered, and if necessary, returned. Products advertised are not necessarily endorsed by FUTURE LIFE, and views expressed are not necessarily those of FUTURE LIFE. Second class postage paid at New York, N.Y. and at additional mailing offices. Subscription rates: $13.98 for eight issues delivered in the U.S. and Canada. Foreign subscriptions $20 in U.S. funds **New subscriptions**, send directly to FUTURE LIFE, 475 Park Avenue South, New York N.Y. 10016. Notification of **change of address or renewals**, send to FUTURE LIFE, Subscription Department, P.O. Box 142, Mt. Morris, IL 61054. Printed in U.S.A.

ANNOUNCEMENT!

FUN!

. . . that's what distinguishes FUTURE LIFE from all the other magazines that have followed us toward tomorrow.

FUTURE LIFE is a young, energetic staff of researchers and writers—filled with excitement, loaded with wit, and brimming with curiosity. Each issue they create a colorful crystal ball that shows you the world of the future—a better, more positive world than today.

FUTURE LIFE is science fiction authors and book reviews, incredible art portfolios, music and media trends. It's interviews and articles by the greatest minds of our planet (including Harlan Ellison's regular column) with words of warning about our present and words of inspiration about the wonders of tomorrow. In other words, it pleases your eyes and teases your imagination.

FUTURE LIFE is beautifully illustrated science articles like "Leapin' Lasers," "Real Starships," "Urbanizing the Oceans," "Immortality Now!" "Guide for Space Colonists," "Homegrown Robots," "Space-Age Games," and the ultimate medical triumph, "Designer Genes." The facts are so lively, that many say this is the *only* magazine they read cover-to-cover. In other words, you won't feel like you're plowing through the AT&T annual report.

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input

Because of the large volume of mail we receive, personal replies are impossible. Comments, questions and suggestions are appreciated, however, and those of general interest may be selected for publication in future issues. Write:

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DRUG CULTURE

. . . I read with interest Norman Spinrad's speculations in FUTURE LIFE #19 and the letters in response in #21. I would like to insert my comments into the discussion.

Although I certainly cannot accept a simple equating of drug involvement and space exploration support, I would be inclined to agree that those who cannot see the value of outer space exploration are apt to also be those who are frightened by the very idea of intentional modification of what some like to call "inner space" and vice versa.

In the course I teach on drug education, one of the points I try to make sure every one of my students grasps is that no one is drug free. We all take drugs every day. Mankind is a drug taking and consciousness altering animal. Sir William Osler, the great Canadian physician of the early 20th century, said that the desire to take drugs was the foremost characteristic differentiating man from the lower animals.

Most of us don't think of many of the mind altering drugs we take as being drugs but drugs they are nonetheless. Tobacco is a very highly addictive stimulant drug. The caffeine found in coffee, tea, chocolate, cola and many other beverages is a stimulant of considerable potency, is capable of producing delirium and hallucinations and has produced drug-induced psychoses in persons drinking very large daily amounts of coffee.

Furthermore, the so-called "drug-free" or "natural" alternatives to drugs are really no more drug free than the drugs themselves. Non-drug approaches to relief of pain, for instance, such as acupuncture or biofeedback, actually work by causing the body to produce endorphins or enkephalins, natural bodily products which are almost identical to morphine and which produce exactly the same effects as an equivalent dose of morphine. Research is already gathering to show that the endorphins and enkephalins are as addictive as morphine or heroin —in point of fact your body can't tell one from the other.

Drugs are dangerous. All drugs are dangerous. Legal drugs are as dangerous as illegal drugs would be if it were not for the added dangerousness inherent in the law rather than the drug. But every means of altering consciousness is dangerous. And everyone alters their state of consciousness.

The present differs from the past not in our use of drugs to alter consciousness but in our more systematic use of drugs of better known effects. The future will unquestionably hold more use of more drugs; hopefully it will also hold more intelligent use of more precise drugs.

David F. Duncan, Dr. P.H.
University at Carbondale
Carbondale, IL

NUCLEAR MATH

. . . While looking over your letters column (FUTURE LIFE #21), I was disturbed by the rather cavalier and evasive statements in support of nuclear technology by James P. Hogan. I assume that this is the same James P. Hogan who has authored a number of science fiction adventures in recent years. I have read some of his books, and while by all appearances Mr. Hogan has a command of scientific information sufficient to produce enjoyable enough stories, I suggest he is somewhat lacking in the sort of clear-eyed realism needed to shed light on the difficult issue of the uses and abuses of atomic physics. It is instructive to note that like most gung-ho nukers, his bread is buttered by the scientific business (the most up-to-date bio for him lists him as in the employ of the Digital Equipment Corporation), and I suggest that this expediency has blinded him to certain painful realities.

Most amazing to me is Mr. Hogan's reference to the "proven safety" of the nuclear industry. I'm sure that he would be loathe to address himself to the problem of nuclear waste disposal, which has to date never been satisfactorily solved. Twenty years ago the public was assured that the problem was trifling, considering the scientific expertise being brought to bear on it; unfortunately no solution has been forthcoming, and a recent act of government has postponed the issue another 15 years. It is a pleasant euphemism to say that these wastes are a problem we are leaving for future generations. The truth is that for 40 years now wastes of all levels have been disposed of in containers that have been shown to have an optimum structural integrity of 25 years or less.

Beyond all this, even if some way were found to deal with the waste problem, which at the moment seems unlikely (last year it seems the affiliated nuclear industries spent more on public relations than on waste management), there are still a number of other matters, from the potential for terrorism to such realities as earthquakes and natural disasters triggering major accidents, as well as the extreme difficult-to-address problem of nuclear proliferation. So if Mr. Hogan sees nuclear technology as safe I would like to know what optimist tints his glasses.

There is no particular reason to believe that the businessmen who run the nuclear industries are going to be any more conscientious, socially and environmentally, than say those of the chemical industries, who by their indifference to all but profit have effectively contaminated the waters of cities, counties and whole states. And given the present system of business-as-usual, there seems no way to call any of them to account for their mistakes and misjudgments.

Bert Lee
New York, NY

. . . The letter from James P. Hogan in the Input department of issue #21 had some very poor arithmetic in it. Reference paragraph ". . . the U.S.A. spends money on defense at the rate of $60 million per hour; if it stopped spending for four hours, everyone in the country could be a millionaire." Oh, really! Spending $60 million per hour for four hours could only make 240 people millionaires.

Using the population figures of 240 million people, it would take a total of four million hours or 166,666.67 days or 456.3 years of spending $60 million per hour to make everyone in the country a millionaire.

In fact, spending $60 million per hour and stopping after four hours could only give everyone in the country one dollar each.

Since Mr. Hogan denies any "blind acceptance" of nuclear power, I hope he did not believe that we antinukes would accept his figures with "blind acceptance." Try again, Mr. Hogan.

Alfred G. Brichetto
San Jose, CA

. . . I think I goofed!

In my letter on nuclear power which you were kind enough to publish in FUTURE LIFE #21 I included a parenthetical comment that the current rate of U.S. defense spending at $60 million per hour would be sufficient to make everybody a millionaire in four hours. Obviously it ain't so. Fortunately, the gentlemen responsible for reactor design are not as sloppy with their calculations as I am.

My apologies to editors and readers.

James P. Hogan
Altamonte Springs, FL

MOON MINING

. . . This is a letter of comment on the piece on space mining (FUTURE LIFE #21). This is a subject about which I have severe reservations. The L5'ers and the others who are actively supporting the exploitation of the resources of space are treating this too much like the natural resources of this continent were in the earlier days of its "development" (I just love seeing large chunks of scenery labeled "undeveloped"). There should be an international body established now to decide upon what will and will not be open to "mining" among the assorted bodies in the solar system. It was only by a similar bit of fortuitous foresight that we have Yellowstone, Yosemite and the rest of our national park system instead of strip mines or valleys full of highrise hotels and tourist traps.

I realize that they are at the moment not talking about using very much material. Gerard O'Neill, in *The High Frontier*, doesn't believe that mining on the Moon, for example, will need to be particularly extensive. Indeed, that it would be on a very small scale, hardly enough to "keep one bulldozer occupied." But this, like most other estimates, is based on more or less current needs, or needs extrapolated from the present.

As it stands now, there is nothing to prevent the stripmining of Copernicus or Olympus Mons, or the demolition of Phobos and Deimos for their mineral content. There are simply some places and bodies in the solar system that ought now to be made inviolate. Otherwise all your efforts to get into space will be as great a step into the past as into the future. Pittsburgh in space will come literally true and our world will not have become better, but simply bigger.

Ron Miller
Locust Grove, VA

ELLISON'S PAL

. . . Just bought FUTURE LIFE #21. Harlan Ellison's painful protest against the film industry's treatment of the late George Pal leaves me feeling like I'd cry if only I weren't so shaken. I realize that this effect is in no small part created by Ellison's direct revelation of himself as one of the offenders. I don't come out of this obituary cheering for Harlan Ellison. But I'm moved to say this: He's a hell of a good writer, and a genuine moralist and I'll keep buying FUTURE LIFE in no small part for the edge in his voice.

Kirsten Russell
New York, NY

. . . Observations in Mr. Ellison's remembrance of George Pal (FUTURE LIFE #21) remind me of an occasion which surely illustrates how Mr. Pal felt about his craft.

During a film festival featuring *The Time Machine* at the Orson Welles Theater in Cambridge, Massachusetts, on February 20, 1978, the theater staff made a long-distance phone call, with audience hookup, to Mr. Pal's home in Los Angeles.

Someone asked him, "What is your favorite film of all the ones you've made?"

His reply: "The next one."

Ted Pringle
Winchester, MA

DECENTRALIZING SPACE

. . . Carolyn Henson has gone too far this time. Her article in FUTURE LIFE #21 was, to say the least, just plain stupid. As with her bigoted statements in past issues, she resorts to ridiculing and twisting the opinions of those who don't share her attitudes.

Since when does decentralization mean poisoned food and freezing to death? If Henson had bothered to do any deep analysis of this policy she'd know that it really means conservation (I think there's something wrong with five percent of the world's population using 30 percent of its energy), and breaking up the corporate monopoly on energy and the means of production. The true meaning of the "simple life" is to orient high tech to suit all of us and not just those with Henson's white, upper class mentality. An example of what people like Hazel Henderson propose is to build many small, preferably solar, power plants (in addition to solar panels on all homes) in groups of neighborhoods. This is certainly better than a few, giant turkeys running an entire city. Is that anti-tech?

Henson's paranoia is incredible. Who the hell wants her to be poor? Has she ever thought that maybe there are some people in this world who don't have dollar signs in their eyes? I see nothing wrong with getting rich in space as long as we remember that *people* come before *profits* (we end up with a Love Canal and the Ford Pinto when we don't). In her lust for money and power, I've yet to see Henson mention how she plans to treat the people who will be working for her out there.

How will she react when her workers start forming unions, striking and demanding representation at board meetings? Will she overlook safety and environmental regulations in order to maximize her beloved profits? What about all those nonwhite Third World countries who won't be able to afford whatever she's selling? I wish she'd talk about these issues instead of constantly mocking anybody who isn't as power mad as she is.

I can't believe Henson is stupid enough to blame the hold up of the solar power satellite on decentralization advocates. Why would they? The satellite would free us from Big Oil since only the government can build it right now. With a little pressure from those of us, unlike Henson, who give a damn about the less fortunate in this world, the satellite could offer cheap, safe energy to anyone. Do you think our friends at Exxon will let that happen without a fight?

In the future, I suggest that Henson learn more about somebody else's views before putting them down. It's amazing that for all her look-to-the-stars rhetoric, everything she says is just right-wing morality combined with laissez-faire capitalism in space.

William Mitchell
Montclair, NJ

. . . Instead of Carolyn Henson's regular article maybe we could have a pictorial of her in a skimpy bathing suit. She must have some redeeming feature; it's obviously not her ability to think carefully.

As an old fashioned conservationist I worry about the effects on our home planet of actions which greed for profit will lead men to. I have no doubt that even nuclear energy could be safe, that the wastes could be sent to the sun for example. *But* when there's a few

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bucks involved the record sadly shows that necessary precautions are not always taken. So the impasse.

But as long as there are people like Carolyn stating the case in such an exaggerated fashion the no-nuke forces will probably have their way—at least in America.

Carolyn, living like a leper on a Nepalese mountainside is not my idea of "the good life"—though I can think of worse. Nor is it, I suspect, the cherished ideal of those who for various reasons are opposed to large centralized "high" technology plans. To imply that it is, is a misrepresentation of the truth.

Let me ask you, Carolyn, a question. As you stated, people today in some parts of the world are starving to death. And you somehow think that having oodles of solar energy *will* fix that. We have oodles of energy right here in America sitting in the gas tanks of 100 million cars. How much of that do you suppose we could spare to feed those starving people? Answer me that, then continue with your political ambitions. Keep pushing for the solar satellite. That's a good idea.

Tom Hatcher
Hancock, MI

NUMAN FAN

. . . Congratulations on your exciting acquisition. Your magazine seemed at times very outstanding, unafraid and unashamed to present views from both sides. Now that courage will be present permanently in the writings of Harlan Ellison. Who better to lift our dim spirits from the darkest "pit toward the stars" of enlightenment?

I was a little surprised when, in FUTURE LIFE #13, there was no mention of Gary Numan in the feature entitled "The Future of Rock." But my confidence in your judgement has been fully restored with the article solely on Mr. Numan. The article was both interesting and informative on a young man who will soon be well known in the U.S.A., I am sure. In the article there is a piece that says Gary "expresses interest in writing SF stories." I for one certainly hope to see some of his work in print soon.

If the future copies of FUTURE LIFE are anything like recent copies I know they are the best . . . . will be the best (so I slipped up on a tense).

Philip Ferris
Cornwall, England

UNIQUE TECHNIQUE?

. . . As an art student with an interest in airbrushing and science fiction art, I enjoyed the Portfolio article on Adolf Schaller (FUTURE LIFE #22). I admire his work and I believe that he is one of the most talented and skillful science fiction illustrators working professionally today.

However, I disagree with at least one point stated in Robin Snelson's inquisitive interview. Mr. Schaller's implication regarding the unique quality of his painting technique (i.e. using a Paasche AB airbrush, overlaying opaque white with transparent dyes on a dark background, etc.) is a slight exaggeration. I have utilized the same technique for quite some times, as have many other artists. And the AB is nothing new. It has been in use since 1904. Furthermore, Victor Costanzeo, production designer at the prestigious Strasenburgh Planetarium in Rochester, NY, has been using this technique for quite some time.

None of my remarks are intended to discredit Adolf Schaller's integrity and expertise. He is a superb artist and your profile on him was long overdue. I simply feel that credit should be given where credit is due.

Louis A. Mendola
Pittsford, NY

STAR SEEDS

. . . I read Karl Johnson's pessimistic comment on star travel (FUTURE LIFE #20, Input) with a wry sort of impatience. He says he is an "almost total" science and SF nut, yet he denounces a major SF setting. He doesn't quite seem to get the connection between dreams and reality that is inherent in SF. We write our dreams down for others to see, as Jeremy Cohen did in the same issue, to find someone who can make them come true where we cannot. Practicality has its uses, but only where it can be actively applied. Let us first see if the impatient dreams of Jeremy can take us out.

Until then, Karl, *don't trample on the seedlings*, and keep your feline's eruptions to yourself.

Terri Crabb
Superior, MT

SPACE NUTS

. . . In response to Randy Campbell's letter in FUTURE LIFE #21, I would like to point out that many of the world's greatest explorers were little more than nuts with the historical equivalent of "a modified space tug and a TRS-80." People who put restrictions on a place they (let's face it) know very little about are just putting up more roadblocks on a place that's hard enough to reach already. If you shackle your baby's feet, don't expect him to get up and walk (let alone build a space station) as soon as you would like.

And as for Joe Sprezzinski's comment, "The constant search for strike capability, assured destruction, etc. could be moved from Earth's biosphere into space," well, my God!

Sidney Stookey
Kenner, LA

MARS MAKEOVER

. . . Orbiting space platforms may be a temporary answer to our ever-growing overpopulation problem, colonization of our Moon may be possible, but I'm sure impractical for supporting huge amounts of people because of its lack of necessary resources.

We should look to Mars for colonization on the large scale. It seems to be that it would be feasible to detonate a chain reaction explosion in a manner as to accelerate Mars' rotation on its axis, thus increasing its gravity and atmosphere holding power to an acceptable standard, to which we could add desired atmospheric gases.

This to me seems the best alternative. Would it work?

Matthew J. Brady
Moorwood, PA

Sounds reasonable to us.

ANTI-ELLISON

. . . Carl Sagan and Charles Sheffield are defining the future space program. Jerry Pournelle and Harry Stine are reporting on it and doing a good job. Harlan Ellison—your choice of columnist—seems to know nothing about anything connected with the future.

Why did you pick him when there are so many people about who fit the magazine? He's a fiction writer, but FUTURE LIFE is not a fiction magazine—that's not why I buy it and I think it's not why most people buy it. I enjoy most issues, and it's a shame to have a star name who can't add anything to the image of what you are trying to do. Sagan's too busy with TV, but why don't you get a column from somebody else who's really knowledgable about what's going on in science?

If it's a question of money, maybe you could get a good columnist every other issue.

Philip D. Lambert, Jr.
San Francisco, CA

. . . FUTURE LIFE gets better and better. Except for Harlan Ellison, who was dull, August was a great issue. Could you get Norman Spinrad as a regular columnist? Everything he says is interesting and he also knows what he's talking about. Keep up the good work.

Jay Sapitano
Ithaca, NY

databank

ALTERNATE SF

FEMINIST FANTASY

"As a child I loved fantasy and science fiction, but I'd get real mad with what would happen with the women. There was never anyone I could relate to," says playwright/actress Elaine Lee. "I went to see the Special Edition of *Close Encounters* saying, 'I'm going to like this movie.' The men I was with were in awe, had tears in their eyes. I was mad; pissed at Terri Garr. There she was kissing Richard Dreyfuss and he's looking into the skies. *I* never got to go on the spaceship. *I* was at my sister's house with the three kids."

In response to that kind of patriarchal science fiction tale, Elaine, her sister Norfleet and her husband Dale Place wrote *Starstruck*, a space epic which by the authors' own admissions is very silly, somewhat tacky and overall, extremely charming. "Even the bad guys have some things that you love them for," Elaine says.

When *Starstruck* beamed in on off-off-Broadway last spring, Elaine became the leather-clad Galatia 9, an amazon captain sprung from a penal colony where she was doing time for writing feminist nursery rhymes on the planet Xychromo. With her, fighting for truth and justice, are her crewwomen: a disbarred captain, Bruscilla the Muscle; a pleasure android named Erotica Ann; and Sister Bronwyn of the Cosmic Veil, a renegade nun.

Somewhere in space, they meet with Siren 3, a spaceship constructed out of living, breathing Galactic Girl Guides. The Siren's Captain, Verloona, is on her way to trade Krabian slave girls for Borinyum crystals in her never-ending search for eternal beauty.

"She's a combination of all the things men say about women," notes Elaine. "Vain, self-centered, conniving, carnal, bad." At Verloona's beck and call is Rah El Rex, a man of dubious royal lineage; Kalif Bajar; a hopeful recruit named Dwannyun of Griivarr; a killer cyborg named Orga; and Eeeeeeeluh, an empath held captive in a flow of Blukwodonna, an aphrodisial drug.

A stroke of luck and good timing brought fantasy artist Michael Kaluta into the *Starstruck* galaxy. After designing the sets and costumes, Kaluta exchanged his pencil for a hot glue gun to build Galatia's space Harpy and the Siren 3.

The play ran a two-week showcase in April at the Network Theater on Manhattan's West Side. *Starstruck* was received with such enthusiasm, that the members of Wildhair Productions are now thickening its plot in the hopes of bringing it to a larger off-Broadway stage. Several directors have been interviewed and a few potential backers are waiting in the sidelines for a production budget to be worked out.

"*Starstruck* is a big bundle of potential," says Kaluta. "It has potential for being a film, a play, a big-budget thing; who knows what."

"Everyone told me it was crazy of me to think I could do it," laughs Elaine. "We never thought about the fact that there's never been a successful science fiction play."

—Susan Adamo

PHOTOS: SEAN SMITH

Clockwise, at left: Galatia 9 (Elaine Lee); Sister Bronwyn (Kathy Gerber) & Kalif Bajar (Paul Ratkevich); Eeeeeeeluh (Laurie Gittelman); Erotica Ann (Karen Bebb); Verloona (Sandra Spurney).

FAN SCENES

CONVENTIONAL SF

About 6,000 science fiction authors, fans, artists and assorted crazies descended upon the Sheraton Boston-Hynes Auditorium complex this past Labor Day weekend for the 38th World Science Fiction Convention (popularly known as Noreascon).

The avowed purpose of this annual event is to present the Hugo Awards to those authors, editors and artists whom the convention members feel achieved the most distinction during the past year. This year's winners included: Best Novel: *The Fountains of Paradise* by Arthur C. Clarke; Best Novella: "Enemy Mine" by Barry Longyear; Best Novelette: "Sandkings" by George R.R. Martin; Best Short Story: "The Way of Cross and Dragon" by George R.R. Martin; Best Non-Fiction of 1979: *The Science Fiction Encyclopedia* edited by Peter Nicholls; Best Dramatic Presentation: *ALIEN;* Best Professional Artist: Michael Whelan; Best Professional Editor: George Scithers (editor of *Isaac Asimov's Science Fiction Magazine);* Best Fanzine: *Locus* edited by Charles Brown; Best Fan Writer: Bob Shaw; Best Fan Artist: Alexis Gilliland. In addition, the John W. Campbell Award for Best New Writer was awarded to Barry Longyear; the Gandalf Grand Master of Fantasy to Ray Bradbury; and the Pat Terry Award for humor in science fiction to Douglas Adams, who is responsible for the British farce *The Hitchhiker's Guide to the Galaxy*.

Left: Hugo Award-winner Clarke. Right: Toastmaster Silverberg.

However, while the Hugos provided a focus for the convention, most of those attending had come primarily to sate themselves for three days on science fiction and its offshoots. Amid general confusion and overloaded elevators, they attended panels on such topics as "Life on a Neutron Star," "The Teaching of Science Fiction" and "Does Science Fiction Have To Be Bad?"; listened to Gary Kurtz talk about the making of *The Empire Strikes Back*, Isaac Asimov talk about the Campbell years, and Harlan Ellison talk about everything else; played computer games and went on scavenger hunts; bought books, posters and SF paraphernalia in the Dealers' Room; dressed up in flowing robes, loincloths and blue paint; and puzzled the hell out of the more down-to-Earth visitors to the hotel.

A full film program consisting of 40 feature-length and more than 300 short movies included such classics as *Star Wars, Forbidden Planet* and *Attack of the Killer Tomatoes*. And if all this wasn't enough, the more literate fans could besiege such prominent authors as Asimov, Ellison, guests of honor Damon Knight and Kate Wilhelm, toastmaster Robert Silverberg, Dr. Robert Forward, Joan Vinge, Norman Spinrad and a host of others.

Survivors of Noreascon will be attending the 39th World SF Convention next year in Denver, Colorado. *—Barbara Krasnoff*

FILM

CARPENTER ABANDONS SHIP

Literacy in celluloid science fiction may not exactly be thriving but there is some hope on the horizon that a few productions will make it to the screen that will appeal to moviegoers with working IQs above the mid-60 range. Cliff Robertson, for instance, is still working on *Charly II,* a sequel to his Academy Award-winning *Charly* of a decade ago. The original film, based on the SF novella *Flowers For Algernon,* detailed the scientific adventures of mentally debilitated Charly Gordon—a middle-aged man with the mind of a child. Through a series of experiments, Charly's IQ is bolstered to adult level. His newfound intelligence is short-lived, however, and Charly must then endure the horrors of encroaching idiocy. The sequel film, written by Robertson, will deal with Charly's later life. The actor is currently looking for financing. He plans to star, direct and produce the film himself.

John Carpenter, meanwhile, is returning to the speculative fiction field (his last real effort being *Dark Star* back in 1972) with *Escape From New York*. Set in 1997 when New York City is a maximum security prison, the film follows the adventures of adventurer/criminal Kurt Russell as he tries to rescue an endangered President of the United States from the wilds of Manhattan. It seems that the President's plane has crashlanded in the prison and some of the inmates are not exactly pleased to see him.

In focusing his efforts on this project, Carpenter is abandoning *The Philadelphia Experiment;* a World War II science adventure tracing a Navy project and its attempts to render massive warships invisible by magnetic fields and sound wave combinations. Carpenter may return to *Philadelphia* sometime in 1981.

—Ed Naha

NUCLEAR NEWS

WORLD WAR III X 2

1981 is shaping up to be a paranoid's dream-come-true thanks to the kind folks at Universal Pictures. The company is planning *two*—count 'em—two film scenarios depicting everyone's favorite cataclysm, World War III. While Robert Mirisch toils away at a theatrical release based on the best selling book *World War III,* producer Bruce Lansbury is readying a television production of the same title.

According to Lansbury, it's not a real disaster film as much as a "what if" story. "The network gave us a five page outline proposing this question: What if the Russians invaded Alaska with a strong force and struck out toward the pipeline? " he says. "From that, Robert L. Joseph is writing a four-hour script that we contend will be responsible."

Lansbury isn't worried about his project giving any nations aggressive ideas, either. He claims it's "anti-war" in theme. "I have no doubt that it will make some people angry. And some will say, 'Well done.' But my theory is that we have as much right to dramatize an imminent danger as our Washington and Kremlin friends have in putting us there.

"A political and diplomatic situation is as much a disease as cancer. We dramatize what happens when you're dying of cancer to alert viewers of the dangers. Why not tell them what effects a confrontation with the Russians will have? Hopefully, it will have the same impact as *Fail Safe*. This is a way to make people become involved with what their country and leaders are doing with respect to war; a way to educate them."

Lansbury's four-hour telefilm will air on NBC-TV; a network where disaster is a synonym for prime-time programming.

—Ed Naha

MUSIC

ELECTRONIC EXUBERANCE

"If there's anything that can be said about the future of music, it's the importance of change. It won't be any one sound or idea, it'll be about the attitude of evolution, as opposed to sitting in one rut and feeding off it." Scott Simon, one of the three members of Our Daughters Wedding (this month's prizewinner for World's Most Unlikely Band Name), is busy characterizing the openness to new ideas he shares with his collaborators Keith Silva and Layne Rico. He's also explaining, quite without prompting, why Our Daughters Wedding is perhaps the freshest and most exciting new group to hit this year's burgeoning electronic rock scene.

Steve, Layne and Keith have been making music as Our Daughters Wedding for only a few short months, though they first played together almost three years ago in a San Francisco-area band called the Human Bends. "We had the Cheap Trick sound down perfectly before we'd ever heard of them," says Layne, "but then our lead singer decided he was God, so we split." Layne promptly ditched his drum kit, and bought himself a Synare percussion synthesizer. He explains, "I love the sound of drums, but I was bored with them—and damn tired of lugging the set around. I also hated sitting down, being stuck back there. I wanted to be the guy out front, getting all the girls." The Synares gave him the mobility he craved, but they also presented new challenges.

"When I bought my Synares the people at the store didn't know any more about them than I did, so I just took them home and started playing. I looked at them, and said to myself, if I use drumsticks to play these things the way everybody else does, then I won't be able to work these knobs which give you all sorts of wonderful sounds. So I just started playing them with my hands."

Thus Layne evolved his own unique approach to the Synare, and thanks to the infant state of synthesizer technique his style qualifies as "revolutionary" instead of "wrong" (concepts more frequently synchronous than most would care to admit).

Keith Silva's expressive, texturally-rich voice forms the band's passionate vocal personality, and his Roland String Synthesizer fills the air with sweeping strokes of warm, soft-edged melody. His "Nightlife" is one of Our Daughters Wedding's best songs. It is a majestically tuneful ode to obsessive nocturnal activity that usually closes a live set. This past spring, Keith and Layne recorded the song as a two piece (before Scott and his Micro-Moog joined in early summer), and with another nifty ditty on the flip-side, "Raincoats & Silverware," released it as their first single. "The whole thing cost us $1,500, from recording to pressing to packaging," Keith reports. "That's extraordinarily cheap really—people have been calling us up wondering how the hell we did it." Layne shrugs in his typically nonchalant manner and says, "It was easy, we just did it. I designed and executed the cover, my brother took the picture that's on the back in front of my father's newspaper press..."

The thousand copies of the single have almost sold out, and the band is planning to release another come November. (Copies of "Nightlife"/"Raincoats & Silverware" can be obtained—while they last—by sending $3 to Rico West, 136 Wykoff Drive, Vacaville, CA 95688.)

When talking of future directions the band members seem barely capable of containing their enthusiasm. Says Keith, "We're never satisfied with the way things are—if we were, we'd still be in California playing in a rock band."

—Lou Stathis

Our Daughters Wedding electrifies their audiences.

PHOTO: © 1980 PAUL DUFFY

LIGHT MUSIC

ROCK 'N' ROLL LASER ART

Australian rock and roll group Split Enz's newest A&M album, *True Colours*, is living up to its name. The long player is the first laser-etched disc, with laser designs duplicating the cover art of the album cut into the surface of the record. When struck by light, the disc reveals all the colors of the spectrum in a rainbow effect.

According to Jeff Ayeroff, vice president of creative services for the label, the original idea for using laser etchings on records came out of research for an A&M laser-etched logo which was to be used to combat LP counterfeiting. When *True Colours* was announced as a release, it was decided that the process could be used as a marketing plus.

The holographic grading process used was developed by Michael Foster in conjunction with Balfour Patterson of Pic Disc. Mick Haggery, who won a Grammy Award this year for his design of Supertramp's 1979 *Breakfast in America* LP, came up with the design. The process used for *True Colours* involves laser etching a blank lacquer prior to mastering. The laser infraction is cut one one-hundredth as deep as a record groove. The result has no effect on the disc's sound quality. The original lacquer is then plated, peeled and pressed in the conventional manner.

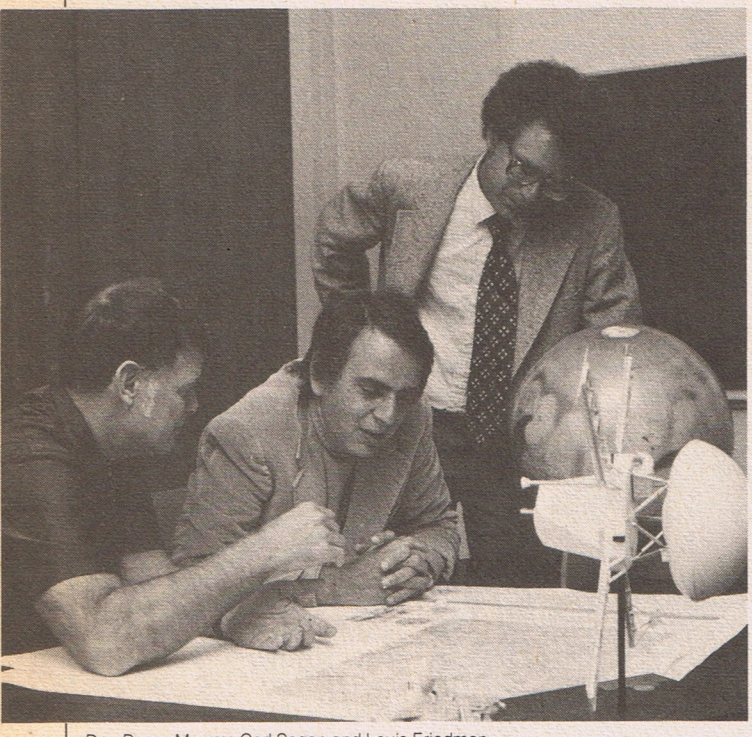
Country fans are anxiously awaiting the arrival of holographic designs for the pressing of the next Dolly Parton LP.

—Ed Naha

PHOTO © 1980 A&M RECORDS, INC.

SPACEY SOCIETY

ARMCHAIR EXPLORATION



Drs. Bruce Murray, Carl Sagan and Louis Friedman.

Carl Sagan has been a prime participant in sending messages from Earth to extraterrestrials: Project Ozma, the Pioneer plaques and the gold records affixed to the Voyager spacecraft. Now with worldwide audiences riveted to his 13-part PBS series, *Cosmos,* Sagan is engaged in sending an extraterrestrial message to the people of Earth.

Earthlings who concur with Dr. Sagan's conviction that understanding the universe we live in is vitally important to the future will be happy to know about the formation of The Planetary Society, a non-profit membership organization over which Sagan presides. The purpose of The Planetary Society is to gather a popular constituency to support space exploration.

"If we can only *exist*," says Dr. Louis Friedman, executive director of the society, "and get to a significant size, that will demonstrate the popular interest needed to keep space projects from getting hit in Congress."

It's an unfortunate fact of life that, while NASA scientists have an abundance of exciting ideas for space exploration, the final decisions about which projects actually get to fly are made in the earthbound halls of Congress. And with the space shuttle problems siphoning off the NASA budget, multi-million dollar ideas like the Halley's Comet mission are never more vulnerable to the Congress' budget axe.

In late August The Planetary Society rose to a minor skirmish in the Senate budget committee, when a motion was introduced to discontinue work on the space telescope and Galileo, the Jupiter orbiter and probe scheduled for launch mid-decade. The motion did not pass and Galileo and the telescope are safe—at least for the next fiscal year. But if the projects had been delayed, more would have been sacrificed than those exploration schedules.

"It would mean a further loss in American technological prowess," Louis Friedman points out, "because the programs are breaking new areas in data processing, optics and electronics."

Executive director Friedman, a planetary scientist with the Jet Propulsion Laboratory, got a firsthand look at how Congress shapes NASA's programs during his stint as a Congressional Fellow of the American Institute of Aeronautics and Astronautics. In 1978 and 1979, he worked with the Senate subcommittee on science, technology and space. He came away from that experience with an interesting conclusion.

"Most Senators and Representatives know that this science is a good thing to do, but they just don't believe it's politically popular." Friedman reflects for a moment. "That's where they're wrong."

Armed with an impressive board of directors and a fast-growing membership, The Planetary Society will continue to press on for space exploration projects like the Venus Orbiting Imaging Radar and a Halley's Comet mission—projects which have not yet received Congressional approval.

Members of The Planetary Society will receive a regular bulletin, *The Planetary Report,* plus pictures and invitations to lectures and exhibits on exploration. For more information, armchair explorers may write to The Planetary Society, 1440 New York Drive, Altadena, CA 91001. —*Robin Snelson*

COMING SOON

LIFE IN THE FUTURE (ACCORDING TO ABC)

One of the less spacey science fiction projects on the television horizon is a future history entitled "The People of Earth: 2000," now in development for ABC. The series, which is being planned as a six-hour motion picture, will concern three "typical" families of the future.

"We hope," states Brandon Stoddard, president of ABC Motion Pictures, "by gaining as much scientific foresight as we can, to construct a drama about people coping with all the details of a world now being shaped by us. The most thought-provoking aspect of this project may be for our audience to realize that decisions made—and shortcuts taken—in our daily lives today, could result in massive lifestyle changes for our grandchildren and their families."

To this end, the producers of the film have consulted several prominent futurists for their opinions of the possible lifestyles of the next 20 years or so. They included: Dr. Jonas Salk, Dr. Norman Kalkey, who invented the Delphi Method of predicting the future, Dr. John Naugle, NASA scientist, and Dr. Hazel Henderson, president of the Princeton Center for Alternative Futures.

However, while the setting is meant to be the year 2000, the role call of the TV drama could pass for 1980. The three central characters are a white, upper-middle-class conglomerate head, "mired in technology and bureaucracy"; a black, working class ghetto dweller; and a poor but enterprising Mexican-American female factory worker. Just your typical television trio.

—*Barbara Krasnoff*

LENDING A HAND

SKINNY DIP

Being a thick-skinned individual may have new meaning now that the scientists at the Massachusetts Institute of Technology have gotten into the act. Researchers there recently developed a method that uses a person's own cells and serum to produce live tissue that closely resembles actual skin.

According to Dr. Eugene Bell, professor of biology at M.I.T., the artificially grown "skin" can be used as a blood vessel replacement, or the material could be cast in the shape of a glove. While the new skin would not contain hair follicles or sweat glands, experiments on laboratory animals show that in three or four days the tissue becomes "vascularized"—infiltrated with blood vessels—thereby insuring that it will stay alive and eventually become part of the recipient's system.

This new process is especially important for burn patients, who up to now have had to rely on skin grafts from unburned portions of their bodies. Because the original cells of the new skin will now come from the person to be treated, the heretofore unsolveable problem of rejection of the foreign tissue by the body has been . . . well, solved.

—*Barbara Krasnoff*

POLITICS

SPACE RACE

Considering the growing attention being paid to the space movement by the American public, it is more than a little surprising that the Democratic and Republican candidates for the presidency of this country have paid little or no attention to the question. The slow but sure reduction of funds to NASA which began in the early '70s has not abated under Mr. Carter's administration; and Mr. Reagan's main interest in space seems to be as somewhere to place new and increasingly lethal weaponry.

Anderson has gone on record as supporting a U.S. space program.

However, at least one candidate is aware of the mounting importance of a U.S. space program in the eyes of the voters. John Anderson, who at press time was still in the running as an independent presidential candidate, has gone on record as supporting a strong space program as vital to our development as a nation.

In his official statement on space policy, Mr. Anderson calls for an expanded five-year space program, including the reinstatement of such programs as: an intensified effort to achieve routine operational use of the space shuttle; support of a long-term program to explore the solar system with unmanned space probes; establishment of a permanent U.S. presence in space through planning and design of a general orbiting space station; and active research on technological advances needed to develop a substantial national space industrial capability.

Whether or not Mr. Anderson's reach for the presidency is at all successful, it *is* encouraging that the importance of space exploration and exploitation is starting to be recognized in the political arena.

—Barbara Krasnoff

ON ICE

ON THE ROAD TO ANTARCTICA

Nearly a decade ago, a Japanese oceanographer, Keiji Higuichi, at Nagoya University, announced the idea of a floating, man-made iceberg dam that would span the Drake Passage which separates Antarctica from South America. Higuichi speculated that such a dam might actually help produce more favorable climates in the Southern Hemisphere by deflecting the Antarctic Circumpolar Current northward to the eastern Pacific Ocean.

By latching a number of these icebergs together in a chainlike, flexible dam, a reticulated hovercraft roadway could also be provided. However, any likelihood of such a unique extension of the already-existing Pan-American Highway being built during this century is apparently not too probable. There is speculation, though, that a variation of this concept could prove quite workable in the foreseeable future.

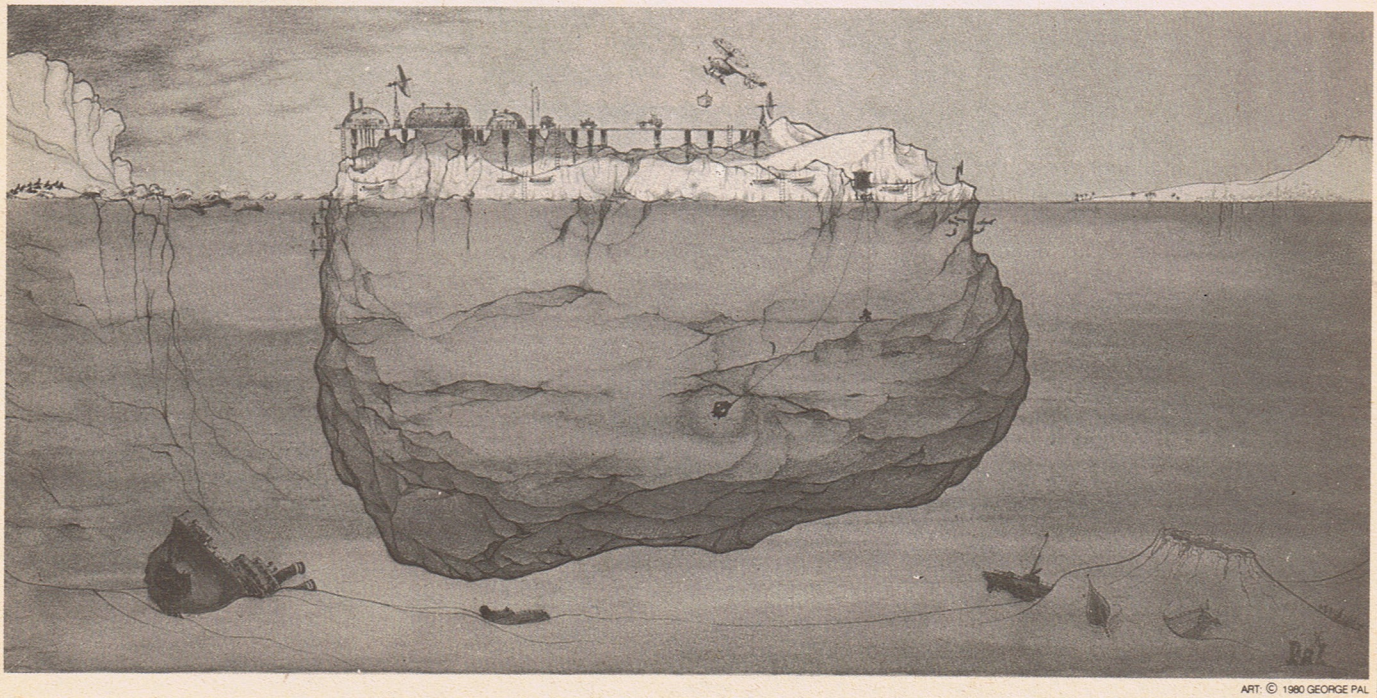
Surface effect vehicles like hovercraft travel on schedule nowadays across the English Channel. They are able to carry heavier, bulkier cargos than short-range aircraft; they are not restricted, as many ships are, by certain sea conditions such as flow ice; they are speedier than ordinary ships; and, lastly, they can be used on the ocean as well as on the land, bypassing the need for transshipment facilities.

Instead of constructing Higuichi's dam, why not build pykrete (ice containing wood chips) hovercraft rest-stops which could be deployed permanently into the seas of the Southern Hemisphere? Anchored to the sea bottom, or kept stationary by applying motorized thrust, such pykrete stations would act as service and refueling stations for trans-oceanic hovercraft operating between Antarctica and the southernmost parts of the Earth's continents.

Envision a parallel highway eventually encircling the South Pole on the Antarctic continent, with many hovercraft roads joining from the coastal and interior zones of that huge landmass. Indeed, a land boom could well result, opening that area to eager homesteading claimants, all arriving by hovercraft! Hovercraft would more likely be the chosen mode of transportation rather than the proposed Planetran System (see "Trains of Tomorrow," FUTURE LIFE #18), because it would be cheaper to install, operate and expand geographically as need arises. And, since there are no native Antarcticans, refrigerator salespersons need not contemplate gulling the populace!

—Richard B. Cathcart

By linking together a number of pykrete "icebergs" in a chainlike, flexible dam, service stations could be constructed for a fleet of hovercraft.



U T O P I A

VIDEO

Rock 'n' roller Todd Rundgren envisions a brave new world of television-for-the-people.

By ED NAHA

The small monitor screen flickers to life in the darkened room. A small boy, slumbering in bed, is awakened by a brilliant flash of red light. Outside his window, the planet Mars hovers, growing to Olympian proportions. The boy speeds off into space in pursuit of adventure. Mechanical toys are transformed into Martian warriors. Spaceships zoom silently across space, engulfed in precision dogfights. On the planet Venus, titanic trees and strange, canine creatures cavort. The planet Mercury assumes a playful, Tinkerbellesque form and glides through the solar system like a pulsating guardian angel.

The images on the screen flow smoothly from one scene to another. It's more somnambulistic than *Star Wars,* more dreamlike than dramatic. At the end of 25 minutes, the screen goes black and the viewer realizes that he has just witnessed an adventure wherein the plotline was conveyed totally through visual imagery and music: Holst's *The Planets.* By commercial television standards, the spacey excursion is a revolutionary step in video techniques.

At the back of the room, *The Planets'* producer, Todd Rundgren, looks pleased at the reaction of his small audience. Known to millions of teenagers as a rock and roll musician/composer, Rundgren is also a force to be reckoned with in the field of do-it-yourself video.

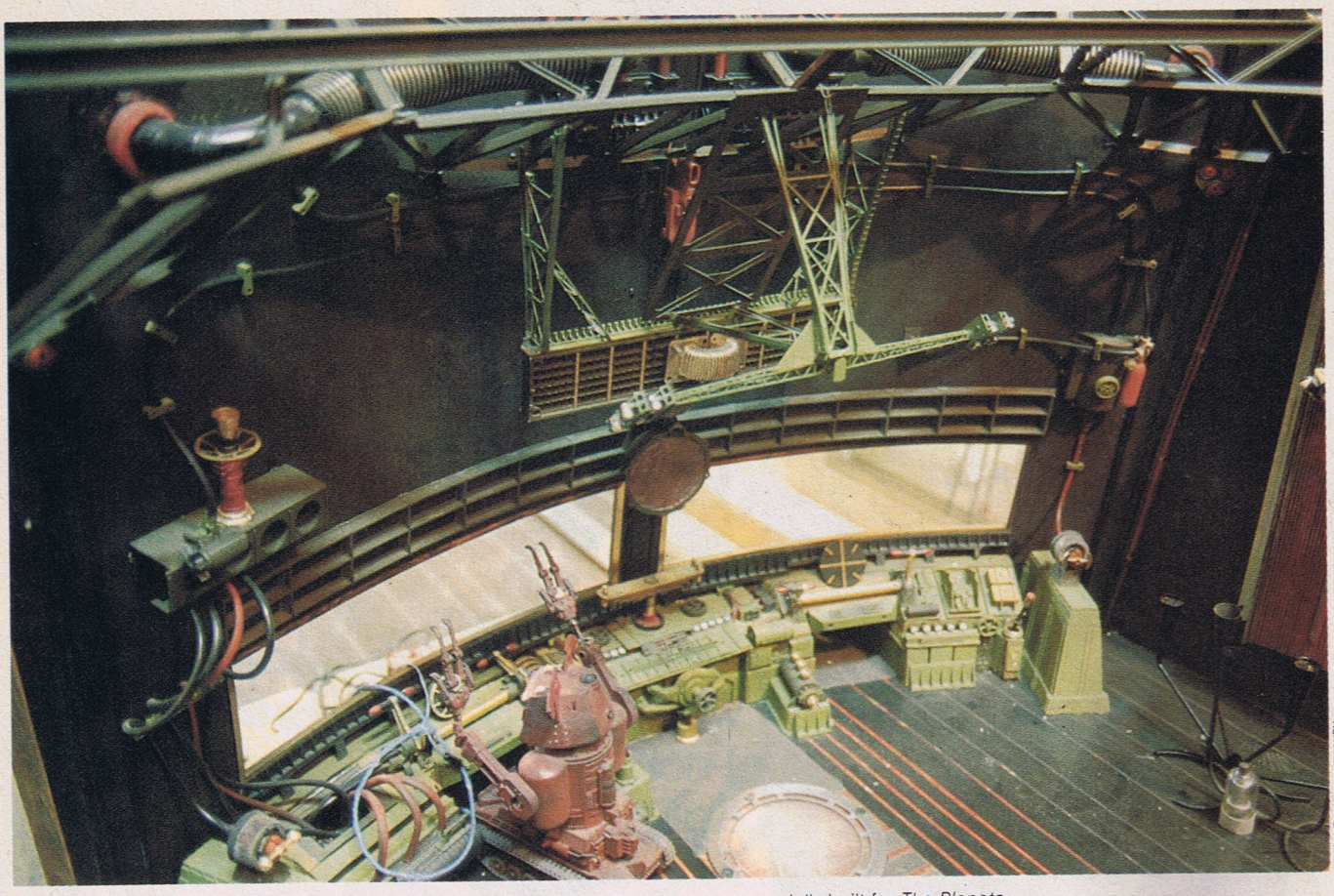
He doesn't look like your typical revolutionary type. His hair is long, yet obviously styled. His clothes are casual, yet well tailored. What serves as the base for his revolutionary operations is, in reality, a million and a half dollar country house/video studio near Woodstock, New York. Despite the expense of his trappings, Rundgren is a bit of a guerilla fighter, a leader in the new army of young video exponents: artists helming homegrown studios who are interested in advancing the state of the art for artistry's sake, commercial video interests be damned.

Rundgren's individualistic stance on video may seem anarchistic to all those whose idea of the medium consists of *Charlie's Angels* or re-runs of *I Love Lucy,* but to those who look to video as the next great step in cultural/communication/entertainment circles, Rundgren is just one of the visionary crowd.

Many technophiles look to the 1980s as the decade of the great video explosion. Network television is quietly losing its hold on "the vast wasteland" of TV viewers. Already, 22 percent of the nation's tube watchers have subscribed to non-commercial cable outlets. Sears, at present, is selling a theatrical TV channel to individual set owners on a house to house, one to one basis. The advent of satellite cable will make privately owned receiver/antennas for non-commercial stations the rage by the decade's end. In addition, the last five years have witnessed the enormous growth of home video markets, with accessories such as video tape viewers, recorders and wall-sized screens becoming big sellers. Several companies, including RCA, are openly proclaiming that an entertainment revolution is en route thanks to the new video disc line.

As highly publicized as these hard-

Rundgren fiddles with a video monitor during the making of *The Planets.*



PHOTOS © 1980 ELLIOT LANDY

Above: A robot pilots an extraterrestrial spacecraft on a miniature set which was especially built for *The Planets*.

Facing page: A conglomeration of sequences from the film. With today's new video techniques, all sorts of effects are possible.

ware advancements have been, their arrival has been much too slow in coming, according to Rundgren and his adventuresome video peers. Their development is being hampered, in the opinion of some, by commercially minded corporations with dinosaur marketing mentalities and myopic vision.

In his own small way, Rundgren is trying to speed up the video revolution and break down the creative restraints imposed by the commercial world. He has produced a $150,000 video presentation, the aforementioned visual interpretation of Holst's *The Planets* as performed by RCA recording artist Tomita. The project was originally intended as a video disc to be marketed by RCA and was half-completed when RCA backed out. Currently attempting to finish the project, Rundgren expresses cautious optimism when talking of the near-future of free-form, conceptual video productions.

Will there be a demand for such an art form? "I think there could be," he ventures. "I don't think that the people who are shaping the market, at this point, have the vision necessary to realize it, though. They haven't seen any examples as yet. A lot of them aren't willing to experiment with something that hasn't been tried. Most commercial video at this point is something that's based on a proven formula or has appeared somewhere else; a movie that's already been a hit in the theater and is simply transferred to video or, in broadcast television, sitcom formulas that spawn countless imitations. Even within those boundaries, if a first experiment is not successful, there will be no experimentation beyond that point.

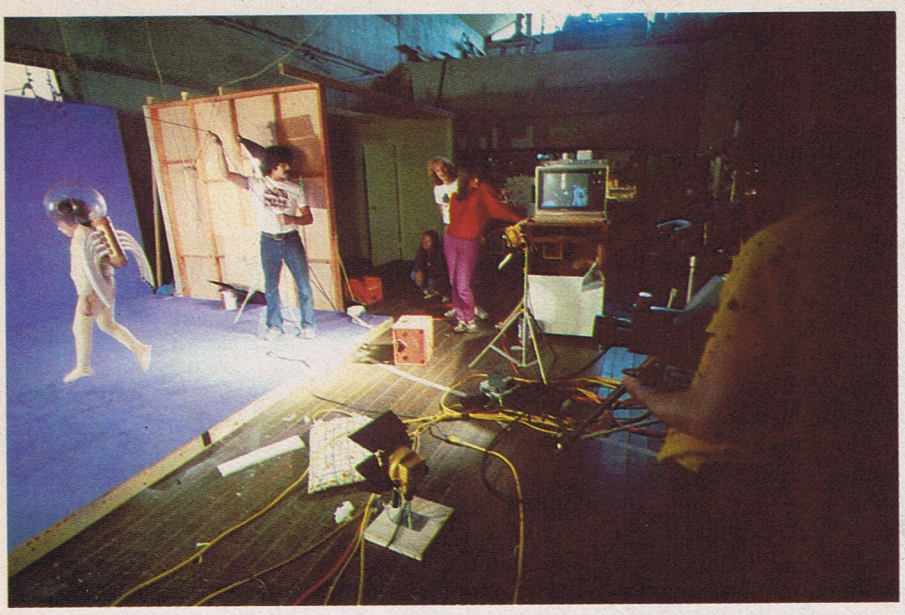
"The breakthrough for creative video will come when one piece is hugely successful. I don't know whether it will be *The Planets* or something else. But some one presentation has to be successful, a video *Star Wars*. People didn't make huge investments in science fiction movies previous to *Star Wars*. Somebody had to take a gamble on that. And it was hugely successful. Then everybody started making science fiction movies with astronomical budgets. Now, there's a whole new genre of film: the high tech science fiction film of the 1970s and 1980s. Someone had to take the same chance with video."

Rundgren removes the cassette of *The Planets* from the tape deck and replaces it in its drawer. He moves from the viewing room to the nearby art room. Inside are stacked small armies of mechanical Martians, Venusian creatures and paintings that served as strange spacescapes in the presentation's chromakeyed scenes featuring live action and various video special effects. Rundgren heads downstairs to his studio proper.

"I first got interested in video about five or six years ago," he says, "right after I moved up here. I used to do work in my house on a more or less personal or experimental basis. The first piece of equipment I got was a video synthesizer made by EMS Industries. I'd been using some of their keyboard synthesizers in my music but when they came out with a video synthesizer, I had to buy one.

"After that, I started accumulating equipment on a regular basis. It still wasn't broadcast quality, though. Then, about a year and a half ago, I got in the financial position to upgrade to broadcast quality. [Editor's note: The financial position was caused, in part, by Rundgren's producing Meatloaf's *Bat Out of Hell* mega-hit long player.] I've continued to add equipment since that time and now we have a broadcast capability studio. Anything we produce here can appear in any format. It can be broadcast over the air or can appear on cable, cassette, disc or whatever. . ."

Rundgren walks through the cluttered



PHOTOS © 1980 ELLIOT LANDY

Rundgren & co. film a special effects sequence using advanced video techniques.

control booth and the vast studio located in the basement level of his hideaway. Amidst the rows of monitors and playback units are choice pieces of equipment. A motion control, computer camera system. BVH-1000 recorders. A Vital special-effects switcher. Rutt-Etra Synthesizer. Two-channel digital effects generator. Sixteen track audio recording capability. The works.

"It's all state of the art," Rundgren drawls. "But in the video industry, where there's a new development every month, state of the art changes very quickly. We're not behind anyone, though. I first got interested in all of this when I started seeing what some people were doing in terms of experimental video, mostly on educational TV: Channel 13 in New York City. They had a regular program called *Video Tape Review* which showed what artists were up to. I think the first time I actually got into a video studio and did anything was for a commercial for one of my albums. I produced the commercial at Channel 13. I had a chance to fool around a little bit with some of the equipment. I was hooked."

As Rundgren's fascination with the medium grew, so did his reputation as a video experimenter. A few years ago, when the video disc was being touted as the greatest leap forward in society since the advent of sliced bread, Rundgren found himself at RCA. "When video discs seemed an imminent thing," Rundgren recalls, "I went to see both video disc companies, MCA and RCA. At RCA, Bob Summers, who was the president of the record division, was the only one who had anything to do with the video at all. They didn't have anyone in charge, so they kind of stuck him in there. I showed him three or four of the kinds of things I had done and he took one of them, which was a sort of preliminary version of *The Planets*, and showed it to some people. He came back with an offer to do a demo."

RCA gave Rundgren a shot at producing a video disc produced and designed as an original visual presentation. Not a disc culled from Steven Spielberg's greatest hits, not excess rock and roll concert footage geared towards the 13-year-old guitar army crowd; but an honest-to-Dumont video production linking original imagery with music.

"I did the demo," Rundgren shrugs. "I did it the way I had explained to them, which was to pay as much attention to the video portion as, for example, Tomita had paid to the music. He takes six months to a year to make an album. It took me four to six months to finish the first half of the disc. It cost relatively very little: $150,000. If I hadn't been working in my own studio, if I'd spent six months in an outside studio, it would have cost a half million dollars. When RCA realized how much it costs to do an original video presentation, they lost interest in both *The Planets* and the concept in general."

By that time, Rundgren's name had been linked to the video disc program via a flood of press releases. When RCA balked, he was left with his tape, a taste of the future of commercial home video and a lot of thoughts on the future of the medium.

"As it stands now, RCA has the rights to use this one side for demo purposes only. They don't have the distribution rights for it. They don't even have the second side. I'm just now working on the second side and once we get the synch rights to the music from the Holst estate, we'll have the sole commercial rights to the production. What will I do with it? I don't know. A lot of people are interested in *The Planets* for various reasons. Cable companies like it. It could be sold as a video cassette. European film companies are interested in releasing it theatrically as a short film. I don't know what will happen."

After dealing with the corporate side of the video disc "revolution," Rundgren has come to see the flaws in the self-proclaimed "next big step" in home video. "I don't see the disc as being the be-all and end-all," he offers. "I think there are too many factors working against it. The manufacturers could possibly pull it off and establish video discs as a popular form of entertainment if they would just spend some fraction of the amount of money they're pouring into hardware on software; creating an indigenous type of software that was unique—that you couldn't get anywhere else. If they did that, people would buy the machines just to view this unique disc entertainment. When you buy the machine today, however, it's mostly old movies you're buying or recycled TV programs; stuff you've seen before.

"If that's all you're getting and if all you're into is a playback device, you're better off buying something that's a recording device as well. That way, if you decided that you don't like what you have on tape, you can record something else over it. No video disc has that capability, although I've heard vague rumors that there are discs in development that will do that.

"Aside from that, from a consumer point of view, most people are going to want to get into independent recording more and more. So it's the method by which they accumulate their software that will be the next big thing in video. I just think that things are developing too quickly in other areas to allow the video disc to take hold. Look at viewdata systems and things like that. Eventually, people won't have to go out to a store and buy a pre-packaged presentation. They'll dial up the directory on their data link and pick out the program they want. It will then be loaded into their storage area. That process will completely by-pass the whole concept of going out and buying someone else's software.

"Eventually, there will be more stan-

dardization. The whole digital approach will standardize the art form. There will be a standard of digital video and a standard of digital audio and a standard of digital information transfer. So, all these diverse systems of disc playback will be obsolete soon anyway. There won't be any moving parts in the future systems. It will all be solid state bubble memory or some kind of memory that we haven't even conceptualized at this point because digital technology advances at such a rapid pace... much faster than video disc technology."

At this point, Rundgren would like to be totally disassociated from the RCA realm in general and the videodisc hype in particular. "I don't care at all about the hardware," he stresses. "I'm just into the software. I'm into the programming aspect of it. I'm not touting anybody's hardware. I'd like to see the ultimate end of the hardware wars come to a head soon because that will just make it easier for software producers to

The hardware behind the software.

get what they're into to the people's homes; into the so-called marketplace. As soon as the hardware is standardized, you're going to see untold creativity in the video area—artistry.

"You can see a lot of diversification in video today if you take the time to notice. Things like cable stations and satellite stations are offering a much more diverse range of programming than ever existed before and it's growing even more diverse. Look what's happened during the past ten years with cable television alone! That's why I have more faith in the central broadcasting, central disseminated concept of video than in the disc concept. You can find your audience a lot quicker and narrowcast to their needs. With cable and satellite, big isn't necessarily the best.

"Take a look at the whole Christian Broadcasting network. It's tremendously successful. It comes via satellite and is broadcast by both local network affiliates and cable TV. Those people reach 15 million viewers a week. They don't have to worry about commercial advertising, either, because they're getting money from direct contributions. They have a small, select audience but can afford to stay on the air because their audience pays to see them.

"Maybe that idea, the idea of specialty subscriber networks, will be the key to forthcoming video advancements. Maybe, in the future, there will be a porno network, showing nothing but pornography to people who will pay a large amount of money for the chance to view it. That way, a small audience can keep a whole network going. That might wind up benefitting so-called conceptual video, as well. Maybe there will be video patrons of the arts who will pay to have a network of avant garde video presentations."

Until that time comes, however, Rundgren is perfectly content to work in his studio on ground-breaking projects that will be commercial enough to be shown in any video format yet thought-provoking and visually stimulating enough to invite imitation.

"I think the most important area to zero in on, right now, is commercial television," he reveals. "That's where most people's heads are at. That's what the public is paying the most attention to. TV is why I got seriously involved with video in the first place because people are so attuned to the screen that if you've got something important and relevant to say to them, they're already there in front of that screen in the first place. I'd certainly like to move into that area, but I certainly wouldn't want to say the same things that are already being said there. I want to fill in that gap that people in television today are afraid to touch. Most people in the TV establishment tend to downgrade the intelligence of the audience. They do that, not because the audience doesn't have the intelligence to grasp new ideas, but because the people in charge of TV don't have the intelligence to come up with consistently creative programming. Instead of admitting that they're incapable of coming up with good programming they shrug and say 'People are too dumb to understand it anyway.' Most people in the television industry are only interested in dollars and cents."

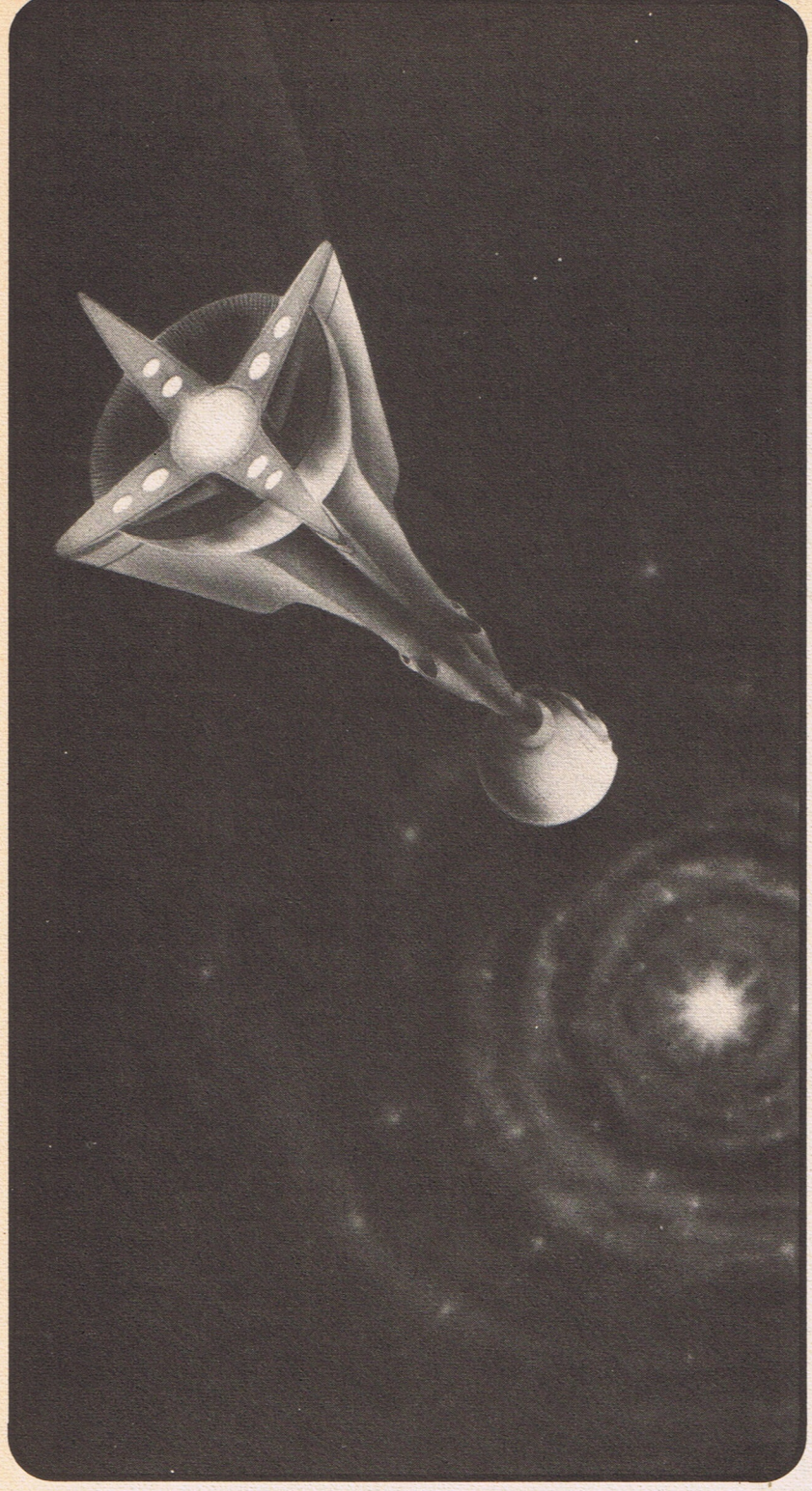
In an attempt to break into commercial TV, Rundgren is currently working on a half-hour fantasy/science fiction anthology show and a series called *How to Run for President*; an historical look at the American political process. He is also, of course, determined to get *The Planets* before the eyes of a national audience as well.

"I don't see any reason why it couldn't appear on NBC, CBS, or ABC," he says. "I think that it would be hugely successful from a commercial standpoint because it's visually pleasing and undemanding. Of course, I also realize that it doesn't fit into any established TV formats. It's non-narrative. We've shown it to broadcast people and they've said, 'It's fine but you have to have someone talking over it, someone explaining what's going on.' That's TV formula. They figure their audience is too ignorant to grasp the storyline. I don't think that's a valid point to make. I won't have it shown any other way than the way it was made."

Rundgren prowls impatiently around his studio, trying to juggle his time between video and recording commitments. His recording and concert career bankrolls his video experiments so there are always concessions to be made. "I think that if *The Planets* was shown on a typical broadcast evening and people were scanning the dials, they'd immediately stop. 'What the hell is this? I haven't seen anything like this on the air before!' If *The Planets* was successful, then it would open the door for other works.

"I don't know that this is the presentation destined to crack the door open but something has to do it... eventually. I think that people involved with straight, network television are beginning to realize that the competition from alternative programmers—the cable people, the satellite people—is getting stronger. Networks have to experiment a little more in order not to lose a lot of their audience. Maybe *The Planets* will do it..."

Rundgren dashes out of his video headquarters, with thoughts of two-way cable TV, home video banks and millions of do-it-yourself video studios existing coast-to-coast dotting his conversation. He's off to New York and a live concert date. Perhaps his visions, his dreams and the dreams of all video pioneers concerning the future of the medium are best found in the name of his ambitious hideaway in upstate New York: Utopia Video.



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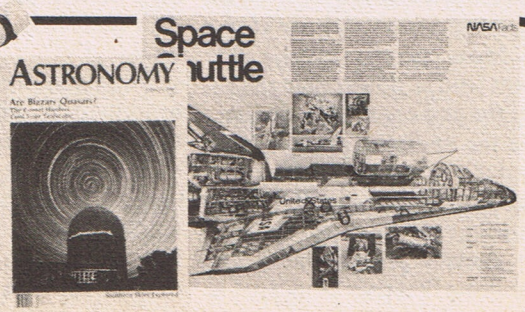

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alternate space

By CAROLYN HENSON

A Runner's Heaven

Some people complain that I act as if leaving the planet will cure all woes. But of course! Now I'll admit that proving space migration to be the perfect snake oil is a tall bill to fill, so I must ask you to be patient and let me tackle just one universe-shaking benefit per column.

It's a runners' heaven up there!

Any fanatic jogger can tell you about that Zen-style high we get into after a mile or two. But many of us get a dilly of a hangover—leg bones splinter under the constant pounding, ligaments tear, cartilage bruises. In ice hockey at least you can grab the satisfaction of blaming someone else for those bashed shins and shattered teeth. But when the chiropractor ordered me to take a six month break from jogging recently, I had no one to blame for that mangled sacroliliac except myself—and old man gravity.

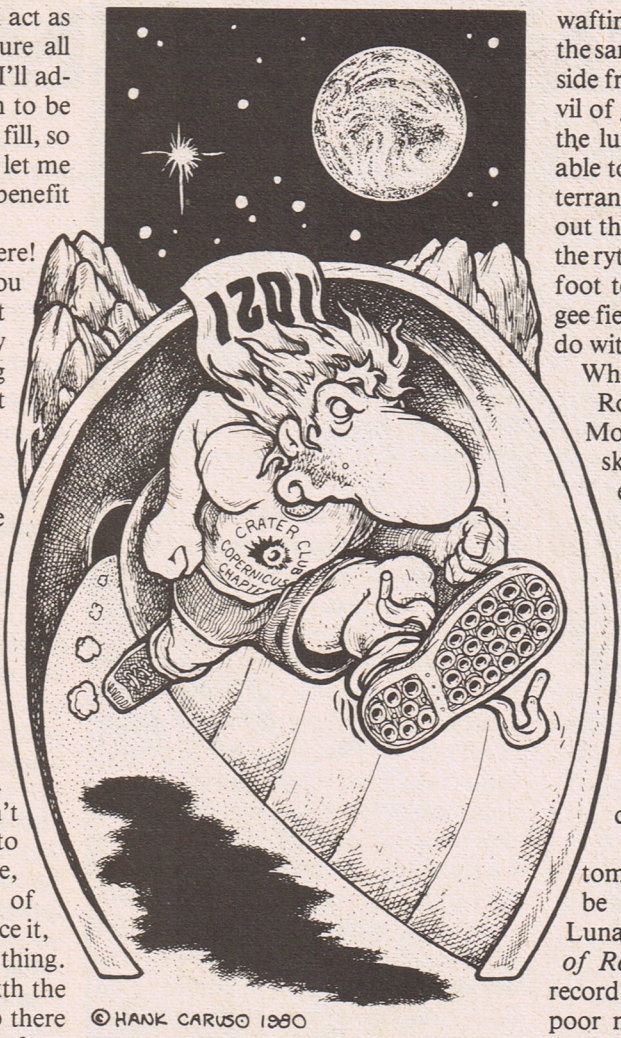
Now don't get me wrong. I have nothing against gravity. Without it our running shoes can't get traction, and we are reduced to careening along, orangutan-style, grabbing onto and shoving off of things with our arms. But, let's face it, planet Earth overdoes this gravity thing.

But the Moon has only one-sixth the gravity of our mother planet. Up there an arthritis victim could jog in comfort, putting no more stress on his joints than he would experience in an Earthside swimming pool. A lady massing a rotund 300 pounds could zip down a lunar track with only sixty pounds of force on her feet.

And what about you disgustingly sound physical specimens out there in readerland? You say you don't need any of that Moon gee stuff? Let the cream puffs trot around Luna while you run like a real (wo)man down on planet Earth?

How would you like to *really* run?

Most of the time a runner is hurtling through the air, between steps. During these periods of free fall Earth gee is dragging you down at an acceleration of 32 ft/sec^2. The force a runner puts into each stride is to a large extent used up in counteracting this gravitational pull. So in effect, running is like climbing stairs. The stronger the gee field, the steeper the stairs.



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If you were challenged to run the 100 yard dash up a flight of stairs 100 yards high or a flight 16 1/3 yards high, which one do you think you could run faster? That's the difference between racing on Earth and on the Moon.

In fact, running on the Moon will be so swift and effortless that lunar colonists may move traffic on jogging paths instead of highways. In Tucson, for example, most streets have speed limits of 25-35 mph. Heck, even Earth sprinters have been clocked at up to 27 mph. Free of the lead shoe effect of Earth gee, our average lunar commuter should be able to zip about as fast as Tucson traffic.

And what about that notorious "runner's high"? Would a lunar jogger, wafting along like dandelion down, get the same physiological kick as her Earthside friends who pound along on the anvil of gravity? Perhaps it would work if the lunar jogger speeds up until she is able to hold her cardiovascular stress at terran jogger levels. However, if it turns out that part of the "high" depends on the rythmic jarring of jumping from one foot to the other under an outrageous gee field, I think I'd just as soon learn to do without.

What about roller skating?

Roller skating will be a dud on the Moon. The main appeal of roller skates is that you don't waste energy fighting gravity. Shove off and you can coast along with only friction to slow you.

Under lunar conditions that friction will be only slightly affected. So roller skating will be essentially the same as on Earth. Novice Mooners will take a few tumbles as they adjust to the dynamics of lunar gravity, but after that there will be no delightful surprises.

In fact, roller derby types accustomed to roaring past pedestrians will be in for an unpleasant shock on Luna. According to the *Guiness Book of Records,* the world roller skating record is a paltry 25.78 mph. Imagine the poor newcomer, a world class skater, debarking on the Moon and skating out onto the main drag. Little old ladies and rheumatism cripples with crutches whiz past at 30 mph while teenagers burn the rubber off the soles of their super traction sneakers accelerating from zero to 40 mph in five seconds.

So, the lunar city I build will boast jogger freeways. The commuters will sport footgear with high traction treads and wear billowing blouses. They gallop into the nearest freeway, a padded tunnel with a 50 mph tail wind. They spread their shirts like sails and are off.

Our city will employ a corps of jogger cops, too. An officer sees a traffic violator and turns on the revolving red light on his hat and points a hand-held siren. It's another one of them Earthworms running the freeway at below legal speed—no, not running, that Earthie's got on roller skates!

NORMAN SPINRAD

By M. BERKENWALD and CHRISTOPHER JOHN

As one of the leading riders of science fiction's New Wave, Norman Spinrad qualifies as a progenitor of post-pulp SF. His literary looks into the future explore not only the possible changes in technology and environment, but the more elusive changes in human behavior that will result.

Born in New York in 1940, Spinrad has lived in California, Mexico, England, Scotland and France. In addition to his writing projects, he is also devoting some of his considerable energy to his position as president of the Science Fiction Writers of America. (His first major accomplishment as SFWA president was to reserve the Waldorf Astoria for next year's Nebula Awards banquet.)

Since his days as a columnist for the L.A. Free Press, *Spinrad has worked in, and been fascinated by, the media. Communications and the media are central themes throughout his stories and novels.* Bug Jack Barron, *a modern SF classic, focuses on the power games played by a TV talk show host of the future. In 1979's* A World Between *he tells the story of Pacifica, a planet where the mass media has evolved into an electronic democracy that governs by the instantly tabulated votes of the citizenry. His latest science fiction novel,* Songs from the Stars, *is concerned with that ultimate communication—extraterrestrial.*

His other works extend from his early novels The Solarians *and* Agent of Chaos, *through his short story collections* The Last Hurrah of the Golden Horde, No Direction Home *and* The Star Spangled Future, *and to* The Iron Dream, *a book that answers the question: What if Hitler had turned to science fiction writing instead of politics? His latest novel is a mainstream offering,* The Mind Game, *about consciousness cult trends.*

Few writers can claim the range of distinctions accorded to Norman Spinrad. He won a Jupiter award in 1975 for his novella Riding the Torch, *and he was denounced as a degenerate on the floor of the British Parliament for his no-holds-barred novel,* Bug Jack Barron.

Much of your work has dealt with various phases of television media of the future. What do you think the probable future of the media in this country is?

Well, the future of media is one of the things I tried to portray in *A World Between*. I'm sure there will be much more interplay between the media and the political process. One of the problems with democracy vis-a-vis totalitarian states is that totalitarian states can make decisions very fast; democracies are slow and cumbersome. If you have an electronic democracy where you can have decisions made, even referendums made, instantaneously, I think that you can have democracies that react as fast as totalitarian states do to crises without becoming totalitarian. I think that's one possibility.

Instantaneous voting could have its drawbacks. What about the interrelations of voters; their education? How many issues should be voted on?

We can see these kinds of effects now. Polls are like an electronic referendum, except that not everybody gets polled, and it's a lot slower. There's a lot of apathy.

Do you think this apathy problem will continue?

Even with electronics, not everyone is going to be interested. But I think you'll have less apathy when people can press a button on the set after, or during a speech. I mean, if Carter pre-empts all the channels to make a big energy speech, and everyone's got a button that can thumbs up or down it, and 51 percent of the people say, "We don't want to hear any more of this crap," then man, rerun an old movie. I think that kind of power would tend to lessen apathy.

But wouldn't most people prefer an old movie to a Carter speech?

I would.

How do you think the government would handle this?

They could pre-empt everything, like they do now with the major networks. Or there could be certain channels for different government functions. Also, voting needn't be instantaneous. It could be delayed a day or a week so people could tape all the speeches, compare them, and then vote. In *A World Between* for instance, they had a week-long media campaign before the vote to give the people time to think and be influenced. I think it makes more sense than listening to all five speeches and then voting without consideration. Unless a situation like a Cuban missile crisis comes up which demands an instant decision, things would work more to what the people felt were their best interests.

How much of the media manipulation in *Bug Jack Barron* and *A World Between* do you think is actually possible?

It's all there. I mean I could elect myself president if I had an hour of air-time every week. So could anybody else.

One issue receiving a great deal of media play now is nuclear energy. Where do we go on that?

Well, I think that fission power is a probably necessary temporary stopgap.

But where do we put the plants?

We put them on floating islands; we put them in the middle of nowhere—we put them right where they are. I think it's a necessary stopgap because in the short term the only other alternative solution is to go to massive use of coal. We *know* what environmental effects that will have. It would be worse than anything

except a major nuclear catastrophe.

I would not like to see a hell of a lot of development money put into fission. As far as we can see now, the ultimate long-term solution now will either be fusion, or space-based solar power. Realistically, these are 10, 20 years up the line, which is okay. We need to be committed to a program to replace what we've got with fusion or space solar power by the year 2000, or 2010. If we knew the fossil fuels only had to last us that 20, 30 years we would have no problem. If we were committed to really developing fusion or solar stations in space, then we could forget about fission.

Are we committed to developing what we need? Is the government making the right moves?

President Carter's energy policy is a disaster all the way around. There is no policy at all.

Why do you see this happening?

Why? Because to solve this kind of problem you have to be committed to a 20, 30 year time schedule. You have certain immediate, conservative measures which must be taken. You have to start funding the programs that 20 years later will result in deployable solar power satellites and fusion reactors. The problem is that the average politician's attention span is only as far as the next election. The shame is that we're not talking tremendous amounts of money, either. The fusion people said that when they had half a billion dollars a year that was about all they could absorb now in the way of funding. Obviously, if you give them a billion they'll find some way to spend it, but if you talk to the responsible people, they say about a half a billion. In terms of testing a solar power satellite, they could do a shuttle mission with a test satellite and see what the effects of microwave transmission will be. They could test it out cheaply in less than three years. Then, if that worked, they could start building immediately because there is no fundamentally new technology needed to build solar power satellites.

The problem is getting people to back such a program.

There is a lot of energy behind the anti-nuke movement. They're making the same mistake that a lot of people made in the '60s, "I'm against something." They're not for anything. I think it's possible, even probable, that there'll be some fusion, pardon the expression, between that movement and the conservatives in the O'Neill space station movement. There is a lot of political stupidity

PHOTO: JOHN CLAYTON

on both sides at this point, particularly by the O'Neill people. You don't have to go mine the Moon and build a 10,000-man colony to prove solar satellites can be built. If that energy could be put toward a more immediate goal, an instantaneous space program could put a 25-man space station up in five, six years.

Something intelligent must be done rather than just saying, "No nukes." If no nukes, then what? Even if solar-power satellites fit in with their political philosophy because it's natural, it doesn't fit with the also prevalent mood of anti-technology that pervades the anti-nuclear movement. I think that can be a transitory phenomenon, however.

How do you feel about the also strong cries of "No growth"? Think smaller, not bigger. Don't think more, there's only so much we have. Et cetera.

Two things. I think we have two energy problems here, a physical energy problem and a psychic energy problem. I don't think we're going to get out of the mess we're in, the whole economic mess which is directly caused by all of this, until we get back to cheap, abundant energy. On the other hand, I do believe in a transformational steady-state economy. Which means that you have abundant energy and transmutational capability. In this state, a certain amount of raw materials gets transformed through the use of energy and technology into more sophisticated and higher artifacts. That way you don't use up the physical resources, because if we solve the energy problem, we'll run out of copper, or something else.

If we stay on Earth.

Even if we don't. After we mine out the asteroids, then we'd cut up Jupiter into little pieces and use it, but eventually we'd run out of Jupiter. You see, the same technology we need on Earth is the same technology we need to get into space. We're not going to be able to run away from the problems on Earth by going into space because the technology that enables us to become a space-going culture will also be the same damn technology that will enable us to clean up our mess on Earth. The two things are the same. Whether it's fusion, solar power, re-cycling, transmutation of materials, whatever, we're not going to be able to run away from it, and if we can, we won't have to. It's all the same technology. So, I believe in a steady-state technology as far as the consumption of raw materials goes, but not as far as the consumption of energy. We certainly don't want to go backwards into some kind of Luddite movement. I mean, the same kind of people who are talking about going back to less technology and less energy consumption and so forth are making their statements by doing songs about it on their electric guitars.

We've gone through politics, we've covered the media, sex can't change much...

Oh, sure it can. Sex can change.

What changes do you see?

Well. One thing, I mean, there are certainly more possibilities for masturbation.

Technologically augmented?

God knows what kind of stuff, or following the principles of Disneyland audio-animatronics. Well, they sell these bloody dolls which don't move or anything. For more money you can have Abraham Lincoln or whatever it is. I'm sure you could sell those. In all seriousness, there's a lot of science fiction being written now, a lot of theorizing now, about the future, the question of sexual roles. The relationships between men and women, between gay people and straight people. I think that obviously the parameters of the previous society have disintegrated. I think that obviously in the next 50 thousand years or so some new stable sexual code/mores/culture will evolve which will certainly be very different from what has already been destroyed.

Have they really changed though? Isn't it only in the cities? There are the backwards movements, and Anita Bryant had her following. Will there be real change, or is this just a phase?

No. I think it will change. I think it has changed, drastically.

But permanently? That's the question.

And quite permanently. I think technology changed it drastically. The pill changed it drastically. There's no going back to before that. The technology exists to separate procreation from sexuality—so what will that do? The whole question of sexual roles. The great unanswered questions are: Are sex roles biologically determined and if so, to what extent? Nobody can answer that question to my satisfaction right now. What makes somebody gay or straight? Is there an answer to that now? I don't think so. I think that's a very important question. It goes to the roots of, for example, should homosexuals be allowed to teach in schools. If it's genetic, there's no reason not to have homosexuals teaching in schools. If it isn't, if it's nurtured in its environment, then there's an argument on the other side, whether it is a good or bad idea. This is a scientific question that people won't even touch with a fork.

Then you can take it further—if it is biologically possible, should it be cured?

These are questions that have never been opened before. What about just heterosexual relations, role relationships between men and women? Are men and women psychologically the same? Should we have a unisex society? Or is that completely messed up and will that cause a lot of grief? What happens to kids who were brought up by a unisexual couple like that where the role models are completely erased? Will they grow up okay? What will they grow up as? Will it work? Is it biologically viable? We don't know the answers to any of these questions.

We'll start to see in about ten years.

Yeah. We don't know the answers to any of these questions because to a great degree scientific enquiry into these areas has become politicized. The American Psychiatric Association changed their view of homosexuality. They said, "No, it is not a psychological disorder." It is or it isn't. The fact is that they came out with a scientific decision because of political reasons. It was not politically viable to maintain that position. They don't know. And I think there's a great unresolved scientific question that affects all our lives. It's the whole area of sexuality and sex roles. There's a lot of feminist science fiction being written now about these things. It's generating a lot of books, a lot of stories, and a lot of thought. It's becoming a main area of concern of science fiction in the '80s, I think. One of the reasons I ended up writing a book like *A World Between* is that I think that at the moment these questions in science fiction have primarily been the property of female writers. No inherent reason for that—these are things that affect men as they affect women and I think this is going to be a main area of discourse.

One of the things in *A World Between* you'll probably be taken to task for are the Femocrats, the movement of women who advocate lesbianism and hate men. Were you putting this forth as an unnatural outgrowth of feminism?

Well, I think that, and I've said this before, anything ending in "ism" I end up not liking. Anything that ends in "ism," like communism, or fascism, or feminism, or chauvinism, or sexism, or anything— it usually ends up being a form of social fascism in one way. That is, it's a group of people who have an ideology that they want to impose on other people's lives and lifestyles, and to me, that's the psychological heart of fascist mentality. I think that's part of what the Femocrats were. An outgrowth? Yeah, there is a branch of the women's movement that is like that. That is further out than that. The extremist element. And the other thing that happens with movements like this I think is that the less extreme people tend to be forced into extremist positions because the test of, their sisterhood in this case, is whether they still will identify with the furthest out people.

One thing that is interesting in your past is that you've worked mostly in media, and the heroes of at least three of your major works, *Riding the Torch, Bug Jack Barron,* and now *A World Between,* are all media heroes. Why?

There's something central about media. It has formed such a large part of our environment and I think, especially in *Bug Jack Barron* and *A World Between,* it has the fusion of the media with the politics. The media become politics and the politics become media. The big difference between past and modern political history is that before the media, people did not have any kind of first hand or semi-first hand contact with the leaders of the society. They read about them somewhere, or they heard about them somehow. They didn't see them or hear them for the most part. The difference now is that it's a media. You know the old cliche that Lincoln never would have been elected now because he

wouldn't do well on television. But actually, judging from everything I know about Lincoln, he probably would have been very successful because he was a good speaker and had good presence.

Recently, a collection of your stories was released under the title, *The Star Spangled Future,* gathering some of your thoughts about our future. To you, what is that future, where is America going?

There is no such thing as *the* future. There's no such thing as Spinrad's future. What the future will be like depends on what happens now. We're in a critical point in the history of our species now, a transformation point crisis. We will either use up our fossil fuels, poison the planet, kill ourselves or go into a general post-industrial culture which means a much smaller planetary population by the simple expedient of people starving to death; or we will transcend this crisis and get to a point where we will have abundant and clean energy sources. That will be tied in with expanding out into space, which will be tied in with enhanced life spans, which will be tied in with chemical or electronic augmentation of consciousness.

People seem to be forgetting religion. Why?

Well, I think that what we are seeing is another transformation that has occurred. The traditional organized religions have lost their credibility. They've lost it through science, through themselves being a blind alley of making a lot of statements about the physical world which are blatantly untrue or ridiculous, so that the traditional religions have lost their credibility. At the same time we see a tremendous plethora of new cults and new religions and things like that because there's something that people get off religion. A spiritual dimension, a transcendence of logical determinism of science, the mechanistic view of the universe that science tends to give you. There is a spiritual need in people for something transcendant and the credibility is no longer there in the old channels. I think you're going to find in the space colony thing that there's—religion may be the wrong word—that there's a mystical impulse. The whole idea of going out into space has something to do with that. That's why people want to do it. Not so they could build factories and make widgets out there. That's an excuse. I think that there's already a kind of convergence between the space program, between that kind of impulse, and science fiction. The future of this religious impulse will be towards this kind of transcendence that does not violate the known physical laws of the universe. A transcendence that does not involve the denial of scientific truth, but encompasses it.

The religious impulse nowadays, if you see what people are going to, are things to enhance their consciousness. They're going to experiential religions. Stuff like Scientology, even evangelical Christianity, the born-again phenomenon. People do not want rules or to be told how they can overcome sin. They want something that will give them experiences beyond their ordinary being.

Thinking about this experiential aspect to religion brings to mind your story "No Direction Home" in which you have a bishop giving psychedelics in the Host. What do you see for drugs in the future?

Well, I feel that the future of drugs in this society is towards more sophisticated, more tailored, more specific drugs. Drugs that will do what you want them to do, not what you don't want them to do.

But will they be available?

Yeah. Under prescription so far. I just met someone who was taking some smart pills under prescription. You've got to get the pills from Germany but—

Could you explain, "smart pills?"

I suppose it's an enzyme, I don't know exactly what that is. I worked on a piece with someone about all this for a magazine called *Rush*. They went to Isaac Asimov first but he didn't think he wanted to do it so we were recommended. The question was, will these things be legal? Well, grass is legal in 15 states now, or something like that.

But you can't get LSD.

Not easily. Not if you want to be sure of it. I think eventually more of these things will be legal as they get to more tailored sophisticated drugs where they can be created to produce a specific state of consciousness and not something else. When there are drugs in which the side effects are eliminated you will have a situation where the government will be able to say, "Well this stuff will really mess you up so it's not licensed. This stuff is okay. This is a smart pill but it doesn't make your teeth fall out." I think that drugs are kind of central in a way. Or something about them is. That is a question of consciousness taking place in a biochemical-biophysical matrix. The ability to alter that matrix of consciousness and then create artifacts which alter the matrix means that the matrix wants to be altered. It gives us a greater control over our own psychic destiny. I think in that sense these kind of developments are unsuppressible. There are a great many consciousness-changing drugs that are legal. You just don't think of them as such because they're so goddamn pervasive.

Coffee.

Coffee, tobacco, alcohol. John Campbell had this whole theory about tobacco. That it focused your consciousness onto a task. It narrowed it down to a focus and it was really a psychoactive drug. It enabled you to concentrate more fully on your work. Of course, he smoked three packs a day and had to have some excuse.

Who knows what else is psychoactive? Originally chocolate was a psychoactive drug, as the Aztecs used it. Or going even further than that, I'll bet that the national cuisines of various countries affect people's consciousnesses. People who eat a lot of chili peppers and stuff are in a different head space than those who eat a lot of meat and potatoes. That may be a little far fetched but there might be something to it because everybody has a unique biochemistry. Their biochemistry is determined to some extent partly by genetic inheritance and partly by what you feed in. And so what you eat and what you think. The stuff in the air, that's probably a psychoactive drug too. So you can't get away from it. Look, you go on a fast, you don't eat for three days, you'll have a psychoactive reaction. So even not taking anything, you can't get away from it.

Is there anything coming from you in a non-print media? What about *Bug Jack Barron*? Hasn't that been optioned?

Yes, *Bug Jack Barron* is under an option for a film. *Riding the Torch* is under option to MCA for some kind of stage show thing. Whether that will ever get off the ground or not I don't know.

Anything else under option?

No. There was an attempt to make a start on *The Iron Dream* as a movie in France but it never worked out. I've played around with *The Big Flash* trying to do a rock musical. It's still alive.

That's the story where in order to get public approval to use nuclear weapons the government uses a rock group. But then the effect goes out of control and all the missiles are sent off.

Yeah. Well, we went through six meetings with six studios and they just said, "Well, we need a happy ending." (Laughter)

DEVOLVES

By LOU STATHIS

A loud blast echoes in the street outside the New York office of Warner Brothers Records. Inside, Devo's Mark Mothersbaugh cringes in his conference-room chair. "My God," he moans in mock horror, "it's the end." Seconds later a whistle blows the all-clear signal, and Mark exhales his relief.

"The fact that we can hear an explosion while we sit in this room," says Bob Casale, "and then wonder what it really was, whether there will be a blinding flash following it, is a pretty good indication that things aren't going very well."

Three members of the De-Evolution Band (Devo to you)—lead vocalist Mark Mothersbaugh, guitarist Bob Casale (called Bob II to distinguish him from the band's other axe-wielding Bob, Mothersbaugh) and drummer Alan Myers—have been calmly talking apocalypse. The intent is wholly serious, but as with most things that concern these guys, the tone quickly turns in the direction of black humor.

"We've taken in information from all sources, and we really are worried men," Mark says, displaying a fondness for self-satirizing jargon that has become a Devo trademark. Bob adds, "All the indications are that nobody can resist using something once they've made it. It's hard for me to believe that nuclear war won't happen—small-scale, localized nuclear war, though, like someone blowing away the Middle East. There's something almost mystical about atomic explosions. They have this great dramatic potential that chemical/biological weapons lack."

Are these three pessimistic about the human race? "I think it's safe to say that," Alan responds. "We're disturbed at how self-centered humans are, how they think that they are the most important things in the universe." Bob continues, "All they seem to be interested in is indulging themselves at the expense of the race as a whole. No one wants to think anymore, or deal with the realities of our situation. They just want to give it up. So when someone like Reagan comes along and presents these absurdly simple solutions to people, they eagerly want to turn control over to him. I don't think they really believe it themselves, they just want to pass off the responsibility."

As fatalistic as they might seem, Devo deny being cynics. Bob says forcefully, "That's not cynical, it's what's really going on. The information is there—what's bad is that people insist on ignoring that information. They have to be consciously blocking out obvious facts in order to believe in people like Reagan. It's all so absurd, really—if you look back ten and twenty years, you see that half of the things people firmly believed in have been thrown out, and thrown out *easily*. All that's been replaced with something new to believe in, and people go to it naturally. But they forget what has happened before, and they just keep doing it again and again."

It was this feeling of alienation, the disillusionment they felt with the way once-noble ideals were distorted by greed and selfishness, that brought Devo together in the early '70s. But instead of laying about and whining their complaints, the five evolved their hilariously twisted mythology of an America gone mad. Devotown, U.S.A. is peopled with vacuous, polyester-clad "adults" mindlessly pursuing the fool's-gold rewards of a consumer culture. Their children, Devotown's teenagers, are confused and repulsed by their parents' distorted value system, and are searching helplessly for some sort of positive reinforcement of their essentially good instincts. As Mark puts it, "We're kind of the janitors of rock and roll; we're in here with our little Tidy Bowl boats cleaning away the deposits that were left by others before us." The members of Devo see themselves standing in defiant opposition to the putrescent majority of mass culture.

Bob II declares, "Most music is simplistic crap—it circumvents all the major questions and concentrates on the things that are ridiculous, or simple to deal with." Alan agrees. "It just helps people feel sentimental, and encourages them to have unhealthy lapses of concentration." Bob continues the thought: "Most rock is irresponsible because it is preaching a kind of reality that doesn't exist. Rock used to be responsive to what was going on, and that's just not true any longer." Mark concludes, "We think people should destroy their record collections."

Sound like a contradiction? Perhaps, but that parodoxical duality is central to Devo's metaphor for the decaying human condition. Their unique blend of ironic wit, savage self-parody, barely concealed revulsion and transparent statements of hope and encouragement, all shaken to the beat of gut-appeal rock and roll, is what qualifies Devo as one of the essential popular culture statements of the moment. "All that's important," Alan says, "is that people get the feel of what we're saying. There are a lot of people who feel the same way about the world as we do, and we're just trying to help them enjoy themselves in this state of the world." Sort of like fiddling while America burns? "No, not really, because we've got a lot to say, and we'd like to reach the people who don't already share our views." Do they think their message is getting through? Bob answers, "We think we reach people on a lot of levels, because we can go to Japan or Europe, and the people there can understand us without knowing what the English lyrics mean."

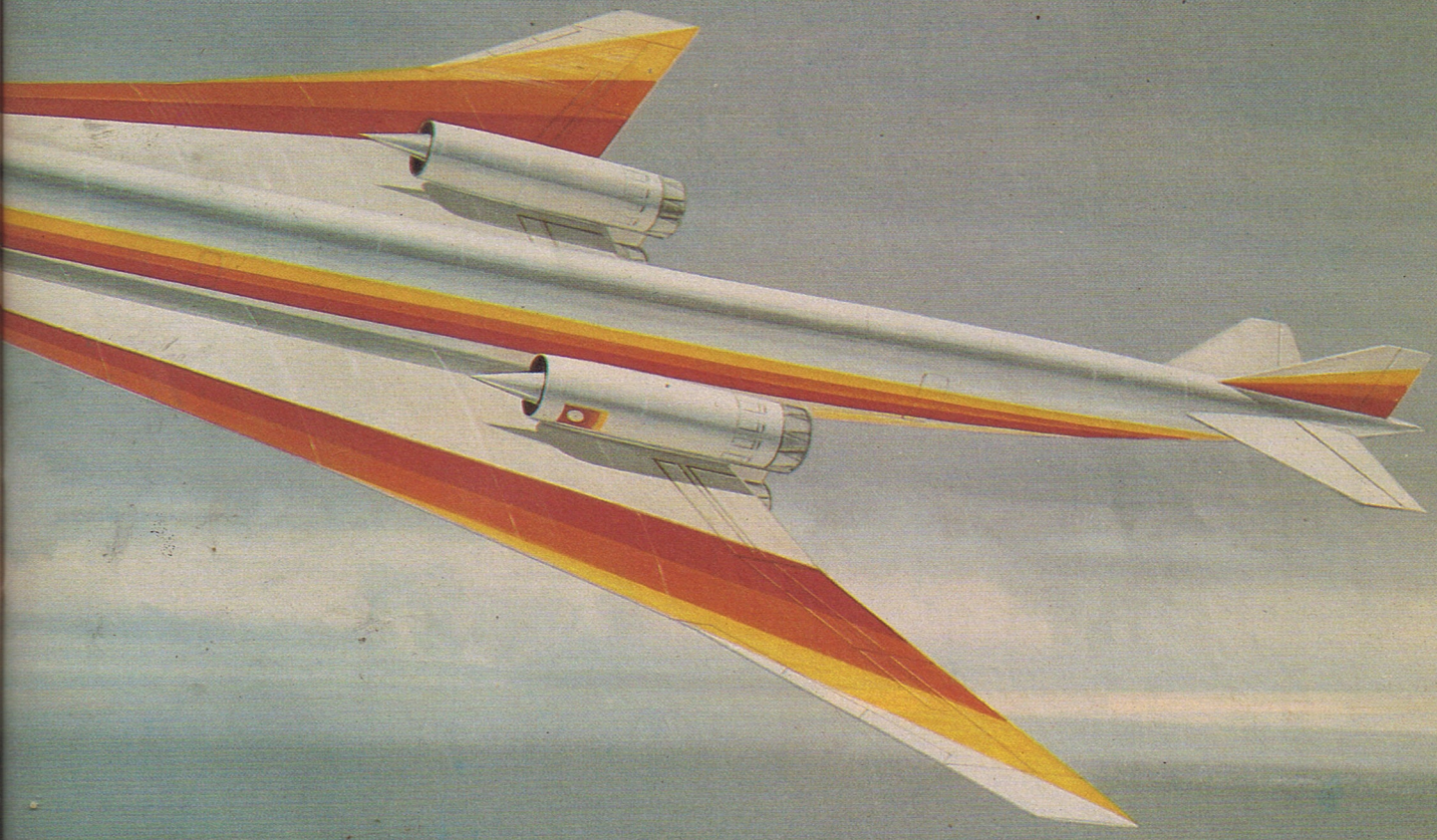
That, however, hasn't prevented the band from being misunderstood. They've suffered the various accusations of being nothing more than comedy music, or cynically pandering elitists, LSD-addled garage futurists, and worst of all, being exactly what they attack—aspiring suburban robots and instinct-fixated humanoid units heralding a future age of mindlessness. "People just don't understand irony," Mark says with a trace of resignation. "They understand parody, but we're not really a parody band." Alan adds his thoughts to the matter. "We've never

(continued on page 66)

PHOTOS: © 1980 WARNER BROS. RECORDS


LOCKHEED

Bigger is Better

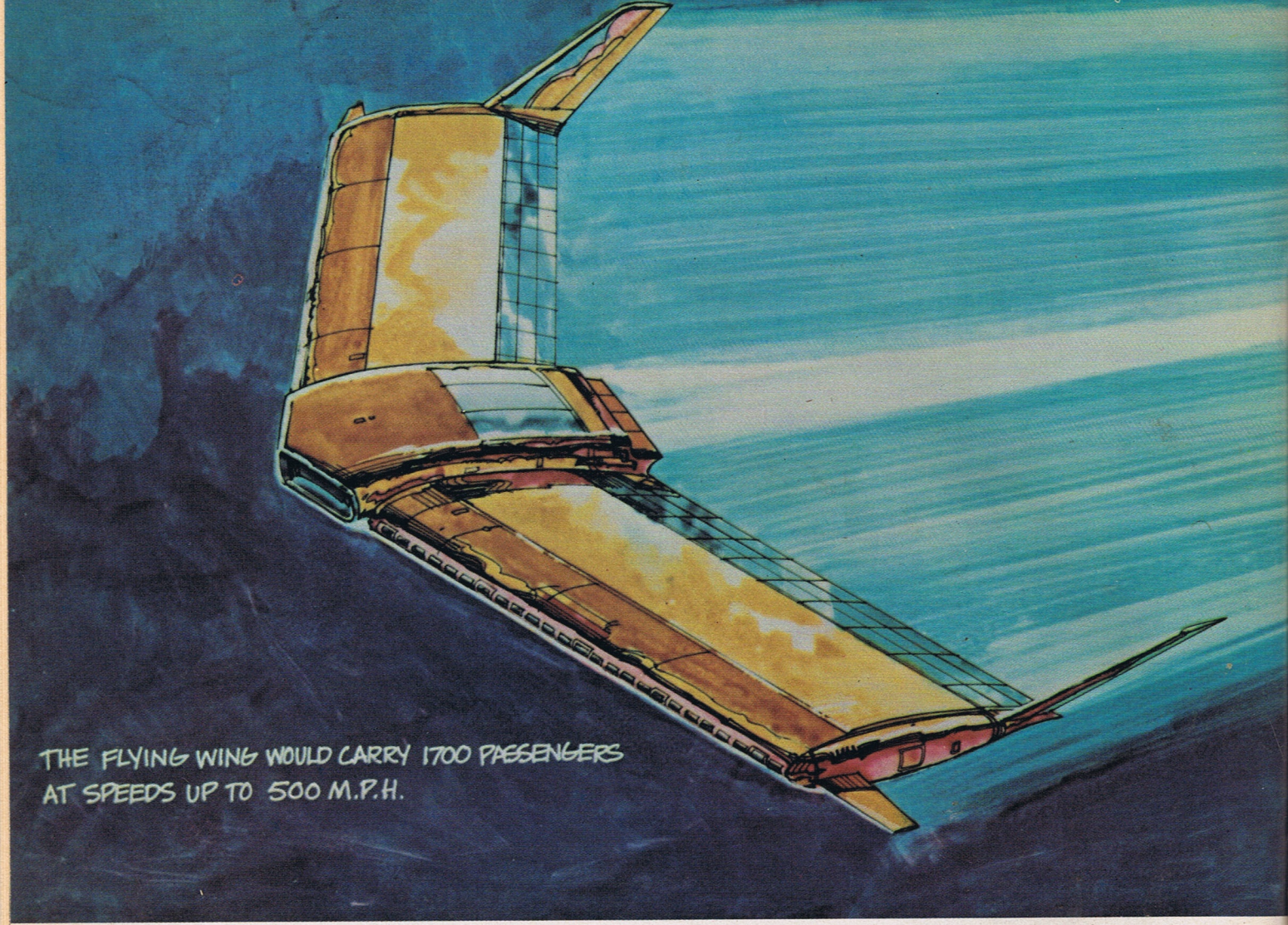


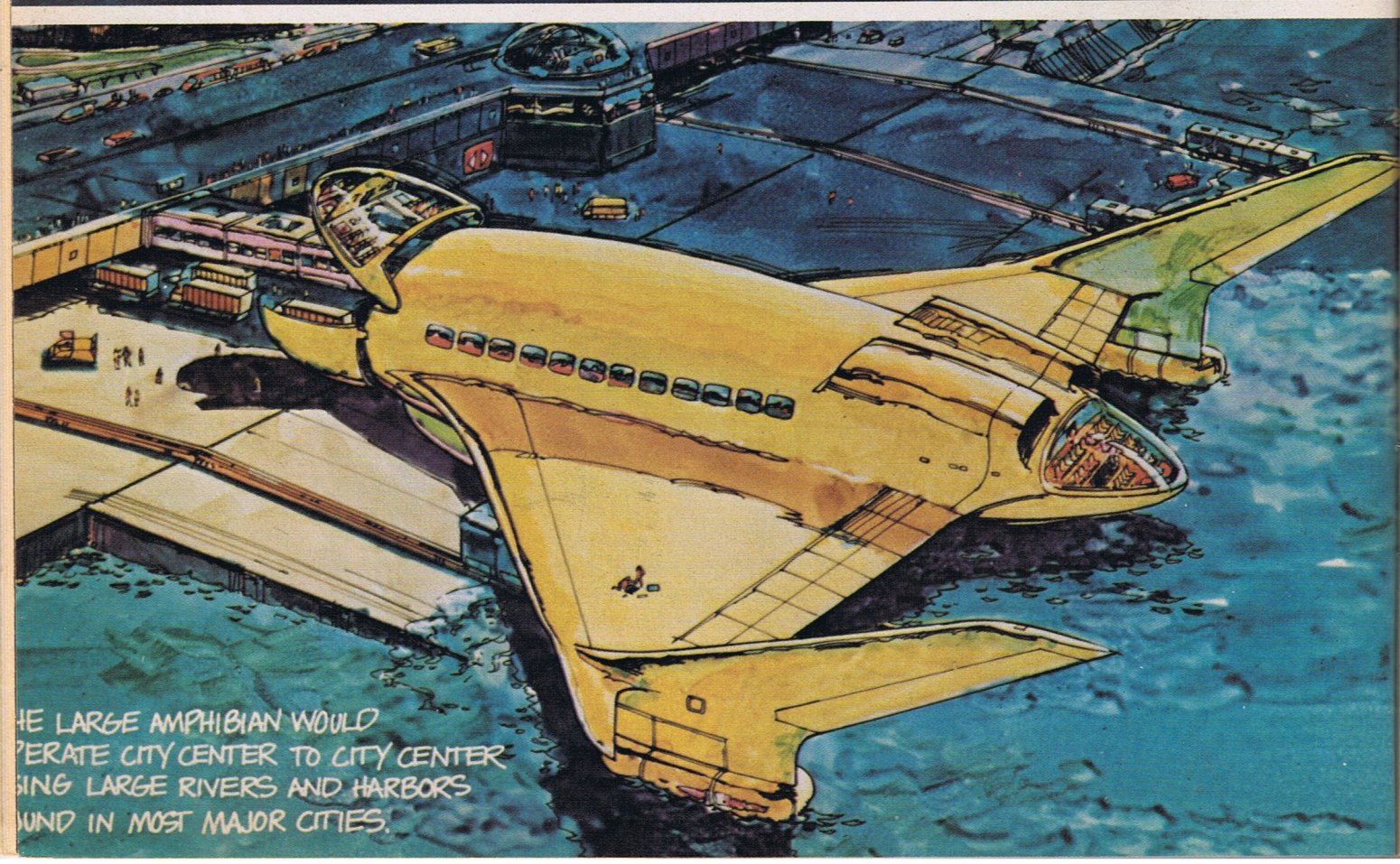
By BOB WOODS

On January 2, 1947, the late billionaire-recluse Howard Hughes climbed into the cockpit of the "Spruce Goose." A Hughes brainchild for application as a military troop carrier, the balsawood plane, with a 300-foot wingspan, was the largest aircraft ever built. As a curious world watched, the same man who earlier gave us Jane Russell's "better (bigger) bra" piloted the "flying boat" on it's maiden and only voyage—1,000 yards.

According to the *Guinness Book of Records,* the "Spruce Goose" remains the largest aircraft ever built.

On April 26, 1979, members of the American Institute of Aviation and Aeoronautics gathered in Arlington, Virginia, for a two-day conference that may well have set the course toward bettering that record. Experts from the aviation field came to discuss the real possibilities of building "very large aircraft," as they are often called. Armed with a series of impressive studies commissioned and executed by both private and government officials, the conferees went away with a clear idea of just what has to be done—and why—in the development of very large aircraft. The following pages offer a giant look into the present and future world of bohemoth aircraft. Sometimes, bigger *can* be better.


THE FLYING WING WOULD CARRY 1700 PASSENGERS
AT SPEEDS UP TO 500 M.P.H.


HE LARGE AMPHIBIAN WOULD
'ERATE CITY CENTER TO CITY CENTER
SING LARGE RIVERS AND HARBORS
UND IN MOST MAJOR CITIES.

The practicalities of very large aircraft are chiefly in the technological area. Many experts believe that within the coming decade certain significant advances will make present ideas for constructing larger aircraft extremely credible and attractive. Predictions are that by the year 2000 there will be greater fuel efficiency of existing sources, alternative (non-petroleum) fuels will be a reality and new, lighter "composited" materials will be ready for aviation designs. Plus, several key advances in aerodynamics will be put to use, including the "laminar flow control" wing design. LFC is a radical redesign of the wing, not so much in shape as in materials and basic concepts. In order to reduce aircrafts' frictional drag experienced at high velocities, the wing would be constructed of a partially pourous substance (most likely a composite) that would actually draw in some air and release it in a way that cuts down on high-speed vibration.

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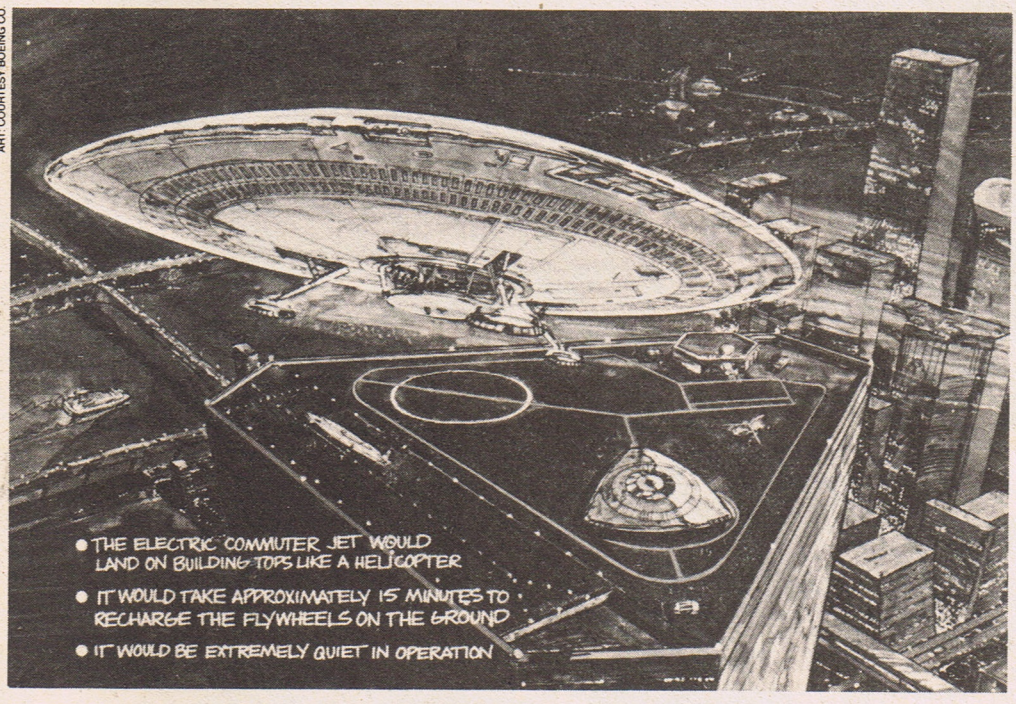
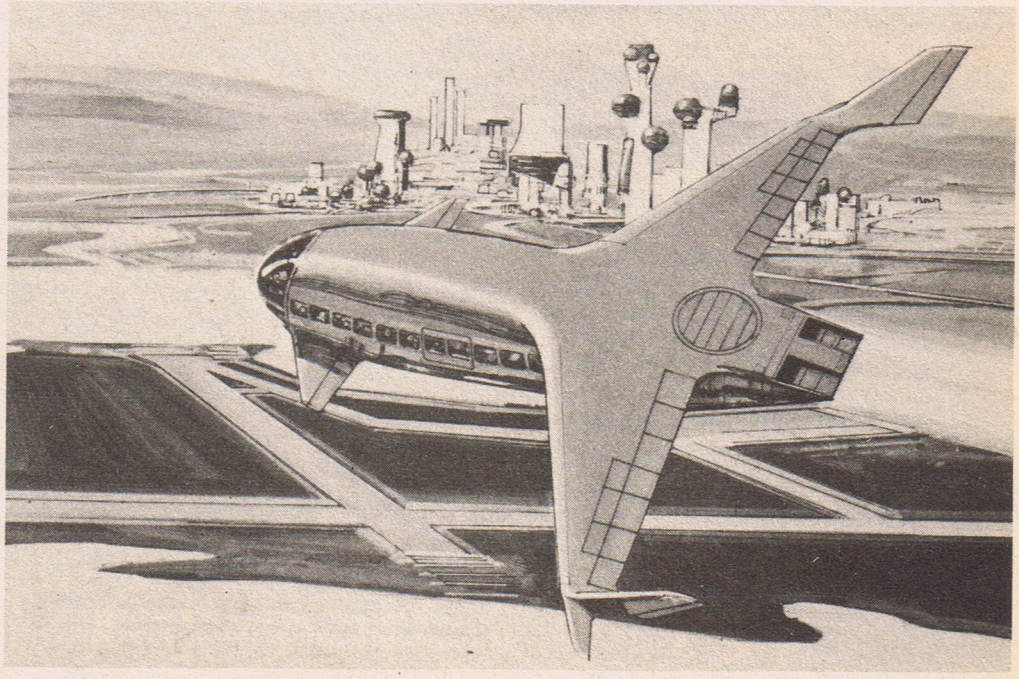
ART: COURTESY BOEING CO.



These four designs are all part of "Air Travel in the Tricentennial 2076, an exhibit designed by the Boeing Company for the Smithsonian Institution in 1976. **Left:** Electric Commuter Jet. This "flying saucer" is ideal for intercity or other short hops. It carries 100 passengers at a cruising speed of 465 mph. **Below:** A second intercity transport vehicle, this craft uses liquid hydrogen fuel and its nose docking allows for both cargo and passengers to be loaded and unloaded at the same gate.

Opposite page, top: The flying wing. The greatest advantage of this design is in its weight distribution. The payload capacity is spread over the entire craft instead of just the body as with conventional aircraft. **Bottom:** Boeing's amphibian is designed to deliver both passengers and freight, at a low cost, into small airstrips or rivers or lakes. It uses a fusion reactor to power turbine engines. The reactor would use hydrogen and a light metal, making it radioactive- and pollution-free.



Preceding spread: Artist's rendering of the "Arrow Wing," Lockheed-California's design for advanced SST which would travel at a speed of Mach 2.55. Capable of carrying 290 passengers (the present SST carries 100) over a range of 4,000 nautical miles, the Arrow Wing concept was developed as part of the NASA's Supersonic Cruise Aircraft Research program. The over/under arrangement of the engines improves wing flutter. (Art: Courtesy Lockheed)

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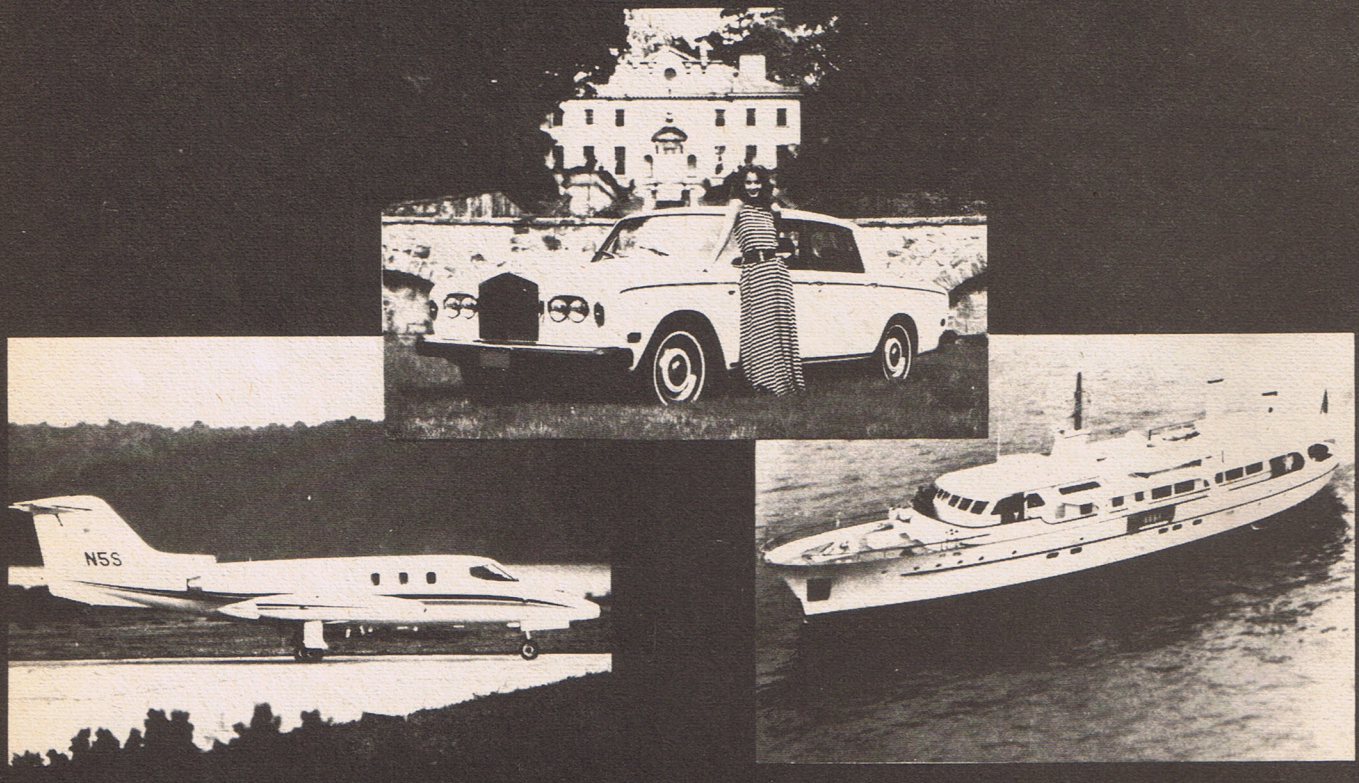

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harlan ellison

AN EDGE IN MY VOICE

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It was one of those weeks, gang. Finished the new novel; had a lady visit from England who refused to speak, so after three days of catalepsy I asked her to give Freddie Laker some return business and she went away (Ms. Marty Clark, my adroit and highly efficient Executive Secretary, opined that the Limey Lady was in awe of me and was thus rendered *tabula rasa*, or more precisely, *tace*; I have come to an irrevocable decision about that cop-out; for years I've heard disingenuous excuses for obdurate silence—shyness, didn't know the people everyone was discussing, wasn't familiar with the subject matter, felt uncomfortable in such a large crowd, felt uncomfortable in such a small, intimate crowd, in awe; have heard all those bullshit rationalizations and have come to the irrevocable conclusion that I'm not going to feel sorry for them mutes no more; not going to "try and draw them out," not going to "try and pull them into the conversation," not going to feel guilty or even the tiniest responsible for them; it's *their* problem and it's a kind of selfishness and attention-seeking even worse than that practiced by those of us commonly referred to politely as "high verbals" or impolitely as "loudmouths"; just ain't gonna slow down or cripple the goodtime talk with bright friends and snappy strangers to *schlep* some semi-narcoleptic self-server into a conversation clearly too fast and complex for him/her to dog-paddle through; piss on'm. . . and the snake they slithered in on); and I got knocked off the *I, Robot* movie project again. Even before I was rehired. Kershner told Warner Bros. he wouldn't direct the film without me and they told him okay, take a hike; their words were (and this is an approximation, but veddy veddy close by reliable report), "We'll close down the studio before we rehire Ellison."

So when I got the word, I told the producer, Eddie Lewis, and Kershner, go ahead and do it with another writer whom they'll approve. It doesn't upset me, oddly enough. I wrote the hell out of that script—took me a year to do it. They tried other writers once before. . . after I refused to do the nitwit revisions suggested by Warners. Three subsequent passes through the typewriters of three other writers, and each one, by report, was worse than the revision that preceded it. So they came back to me. Noise of 5'5" Jewish writer chortling in glee.

But I got the head of the studio pissed at me; had this alleged "story conference" with him a year or two ago, and discovered in the middle of the meeting that he hadn't even read the screenplay he was advising me how to rewrite. Called him on it, proved to my satisfaction that all he was doing was spitting up bits and pieces of a synopsis one of his readers had given him; and he fumfuh'ed and harrumph'd and told me what a busy man he was; how he didn't have time for little pisher problems such as reading the screenplay it had taken another human being a year to write, on a project his corporation was contemplating backing to the tune of forty million dollars; and *I* responded that not only wasn't he functioning in any creative capacity but he wasn't even being fiscally responsible; also suggested he had the intellectual and cranial capacity of an artichoke.

Think I pissed him off.

So this week Kersh and Eddie will have a group of (how shall I put this to avoid the redolence of blacklist?) more or less "acceptable" writers presented to them; and they'll pick some dreg who'll change the names in my script and try to think his/her way around the deranged inventiveness in my screenplay; and it'll be muddled up again; and when they've wasted another batch of thousandbuck months they'll either shitcan the project as being "unworkable" or come back to me once more. If the latter, we can assume a certain sense of utter desperation. That, or more pleasant concept, the executive in question will have been sent back to the mailroom of the showbiz agency from which he slithered lo these many moons ago.

Ho-hum.

And maybe Asimov's *I, Robot* will get made; and maybe it won't. As for me own widdle self, gang, I stand quietly up here on Elitist Mountain watching the clash by night of ignorant armies, as Matthew Arnold phrased it. (If the allusion escapes you, go look up "Dover Beach.")

All of which brings me around by the side portal to the more-or-less topic of this issue's screed, which is: my readers.

You see, I'm told that the executive in question isn't ticked off at me *just* because I compared his ratiocinating abilities with those of a vegetable. He is even *more* mightily hacked at letters sent to him by "fans" to whom I appealed at an sf convention several years ago, to write *polite* letters to Warners suggesting they not make the robots in Asimov's story-cycle cute little R2D2s. Should have known better.

The letters—carbons of which I've seen—frequently began with such encomia as "Dear Asshole" or "Respected Tertiary Syphilis Victim." And they spiraled down into snotty arrogance and idle threats from that already subterranean level.

Should have known better.

One should *never* ask sf fans to attempt a little Machiavellian manipulation. They have all the subtlety of an acrobat in a polio ward.

Suffice to say, added to my own lack of tact, it suitably bent the executive in question, and his entire staff, so far out of shape that steaming them for a week wouldn't have put the puff back in their egos.

Bringing me to observations of the pragmatic realities of having a readership like some of you out there. (No, not you, kiddo, and not you, sweetie, *you're* okay; this is only intended for the

(continued on page 64)

STARHUNT

By ED NAHA

Intelligence and science fiction films have never exactly gone hand in hand, or tendril as the case may be. In order to enjoy many science fiction productions, it helps to check your IQ at the box office and content yourself with assimilating the widescreen cornucopia of way-out effects. Change, however, is in the offing. Some filmmakers are trying to introduce thought-provoking storylines into their science fiction scenarios. In the vanguard of this embryonic movement is Ashley D. Grayson, the idealistic president of the newly formed Grayson Productions, Inc., and producer Mark Nelson.

The twosome are busily at work helming the company's first excursion into filmed science fiction entitled *Starhunt*. Based on *Yesterday's Children*, a 1971 novel by David Gerrold, *Starhunt* recounts the adventures of the crew aboard the semi-clunker battle cruiser *Roger Burlingame*. During an interstellar war, the *Burlingame* is drafted into service. Held together by spit, hope and the iron will of the first officer, the spaceship detects and pursues an enemy vessel of superior firepower. Adding to the crew's miseries is the fact that the ship's computer system is an amalgam of malfunctioning systems; systems that could be just manufacturing the enemy's presence on the cruiser's sensors.

"It's the first small step in an effort to get science fiction literature on the screen," says Grayson. "It's a small step, to be sure, but small out of necessity. We're just a small company. We hope to succeed with this film, however. If and when we do, we then hope to spark a larger trend, moving towards thought-provoking science fiction on the screen."

According to the film's line producer, Nelson, the project started a few years back when Gerrold was attempting to sell a screenplay of his *Deathbeast* novel to studios. "He gave it to Ashley to read," Nelson recalls. "Ashley, being a science fiction fan and attending most of the same SF conventions as David, was familiar with his work. He looked at *Deathbeast* and thought it was really interesting but remembered an older book, *Yesterday's Children*. He thought the older book would make a much better film for David. When Ashley formed his movie company, he flashed back on that book and made a deal.

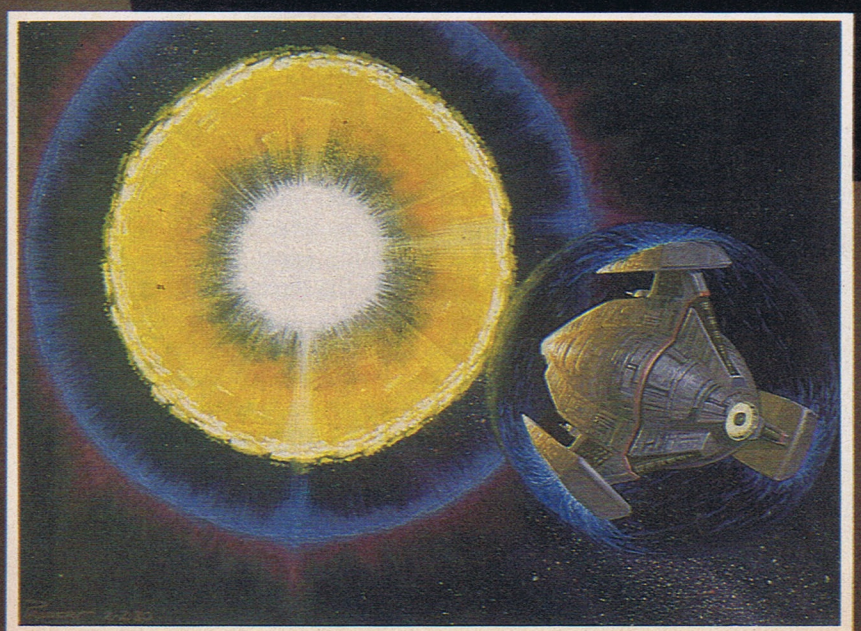
"The book was originally an outline for a *Star Trek* episode. It's written almost as a screen treatment is written. What we tried to do was to take the next logical step and turn it into a screenplay. It required taking out the 'he saids,' and, of course, streamlining it a bit."

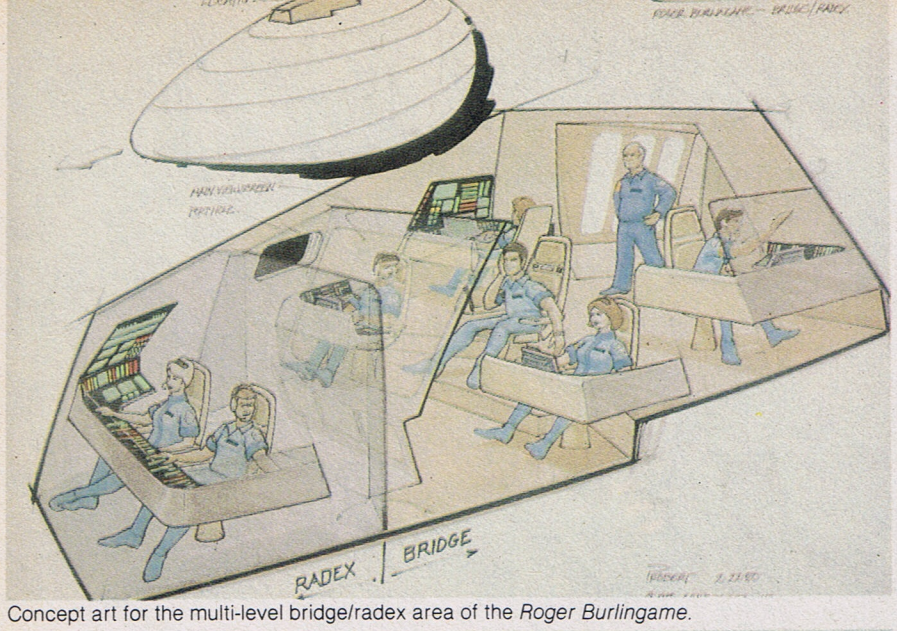
Novelist Gerrold did an initial screenplay and the filmmakers then huddled over the plot, introducing a few new wrinkles to make it more screenworthy. "In the book, the crewmembers were all men," says Nelson. "We changed that, introducing women into the crew. The third in command, the pilot who eventually takes over the bridge, is now a woman. In the book there's reference made to a union representative, implying that there's an organization manning the ship. We felt that in an out-and-out Earth war, it would probably be a military organization in command which would not, in turn, tolerate any unionization. We changed the union rep to a cruise rep and made her a woman. . . a scheming woman, in fact. We've salt and peppered women throughout the script in parts that were, essentially, male roles before."

With the line producer polishing a second draft, the company then hired Andry Probert to do preproduction designs depicting the *Burlingame* in deep space. "Probert started out in January," Nelson says. "We opened our office and my job was to respond to everyone who had replied to the ads we had placed in the trade papers about the film. Andy came in with a lot of other art directors. He showed me his work and I was very impressed. He had just come off the *Star Trek* movie and had worked on the theatrical version of *Galactica*. He has a knack of being very true to the scientific and physical realities of space designs. He comes from a hard technology background as opposed to a space fantasy background. He was in the Navy during the Viet Nam war so he knows how a battleship will perform, how it feels and what it looks like. His ideas were better than anyone else's. We brought him on to do our preliminary art and layout designs for our sets."

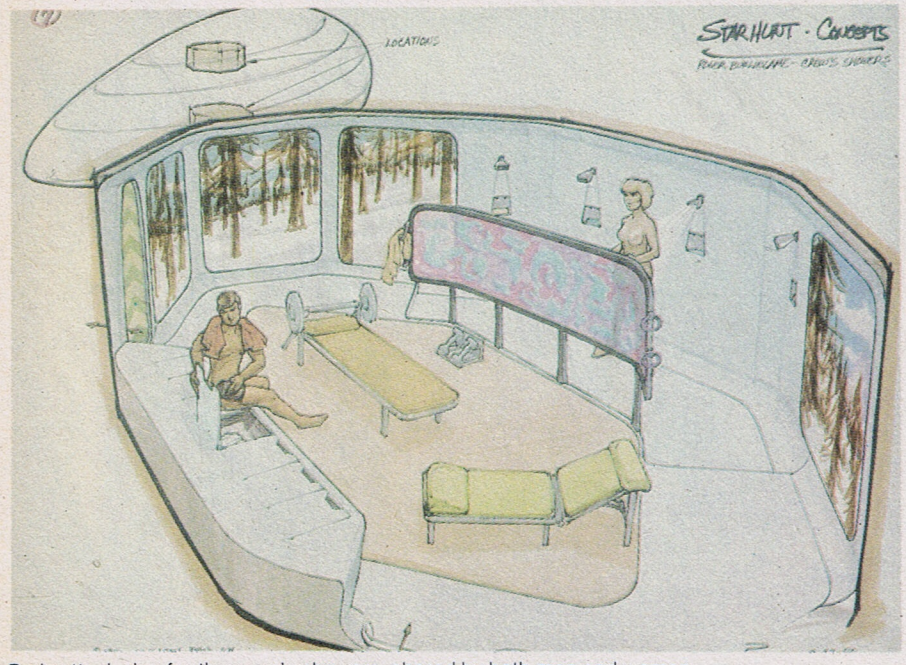
With a working script in hand and a lot of colorful artwork in tow, Grayson and company set out to attract studio backing. At that point, *Starhunt*'s pro-

Right: The *Roger Burlingame*, a semi-clunker battle cruiser. Inset: The ship, protected by a space warp bubble field, watches as a torpedo explodes.

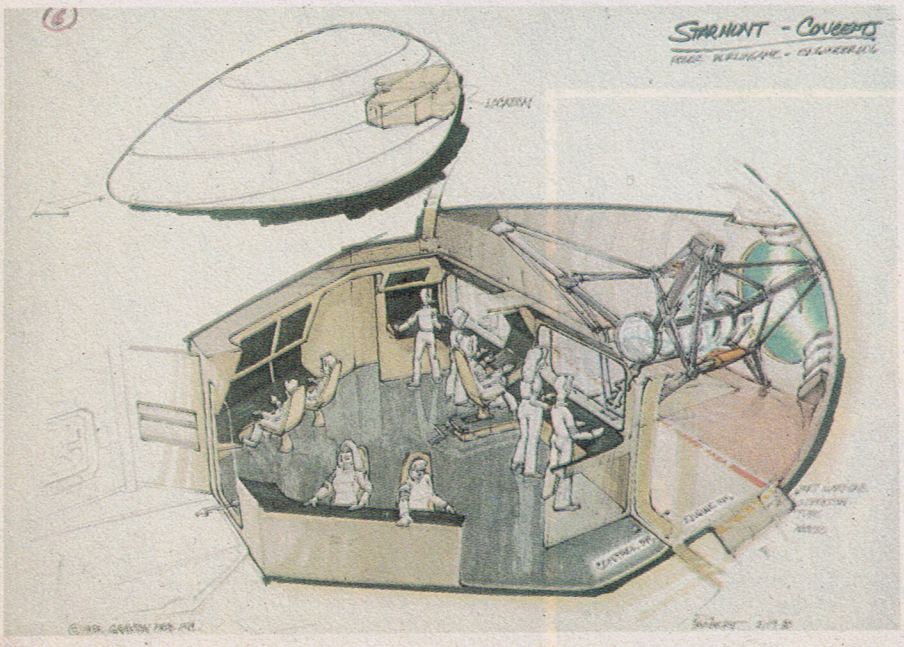




Concept art for the multi-level bridge/radex area of the *Roger Burlingame*.



Probert's design for the crew's showers, shared by both men and women.



Design art for engineering section, located just forward of the engine room.

gress slowed down. Author Gerrold was reportedly unhappy with the final version of the script. The studios themselves were not overly enthused with the project, either. "We've gotten very positive response to the script," Nelson clarifies. "There's no problem with that at all. Our main problem has been the age-old problem that science fiction producers have faced in the past and that is: How do you sell science fiction to a studio? The difficulties in the market today rest in the fact that there is a new wave of pictures, including *Galaxina*, that are science fiction spoofs; *Mad* magazine-type parodies of *Star Wars*.

"People in Hollywood seem to be convinced that either it costs you $40 million to make a science fiction picture that's going to pay off or you might as well do a comedy for a fraction of the cost because, in a spoof, the effects really don't make a difference. So, despite the science fiction boom, we're facing the types of snags that producers in the genre have been tripping over for three decades.

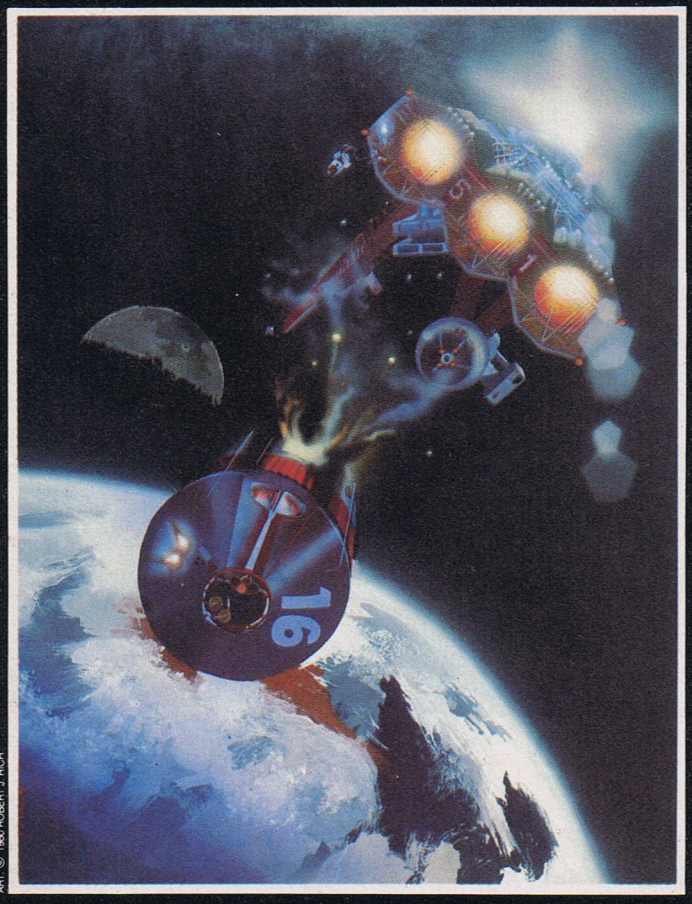
"The script we're doing is more cerebral than *Star Wars*. It's a character drama that happens to take place in space on a space vessel. It bears similarities to *The Enemy Below* and several World War II submarine movies. We think that it's a strong script with a great plot and solid characterization. We will occasionally take it to an agent who will read it, like it and then say 'Where are all the spaceships? Where are the pinball game battles?' It's rather frustrating. They don't think it's a commercial property because it's not an action-packed, explosion-type movie. We'll probably wind up getting financing outside of Hollywood. Canada looks promising at this point. We should know within a few months."

In order to enhance the commercial potential of the project, Grayson Productions has hired Gerd Oswald to direct, as well as to serve as vice president in charge of production. Oswald, who has logged over 1,000 hours of TV time (including episodes of *The Outer Limits* and *Star Trek*) was the director of such cult films as *Screaming Mimi, Brainwashed* and *Agent from H.A.R.M.* George Folsey, director of photography on *Forbidden Planet*, is supervising cinematic concepts for the film and Hughes Research scientist Dr. Robert L. Forward is acting as technical advisor.

In Ashley Grayson's opinion, there is nothing uncommercial about *Starhunt* at all. There are dozens of plot "hooks" that are simply being ignored by most of the major studios who, apparently, are

(continued on page 74)

Robert J. Rich



ART © 1980 ROBERT J. RICH

"I have been interested in the space program since the first Mercury flight," explains artist Robert J. Rich. "My mother used to let me stay home from school to watch the flights. I used to be glued to the set for days."

As with many of today's young space artists, it was this early fascination with the stars that eventually led Rich to apply his visions to his art.

Originally, he had been intent on becoming a photographer. "After deciding that I needed more than a camera to express what was in my head," he recalls, "I decided to learn how to draw and paint."

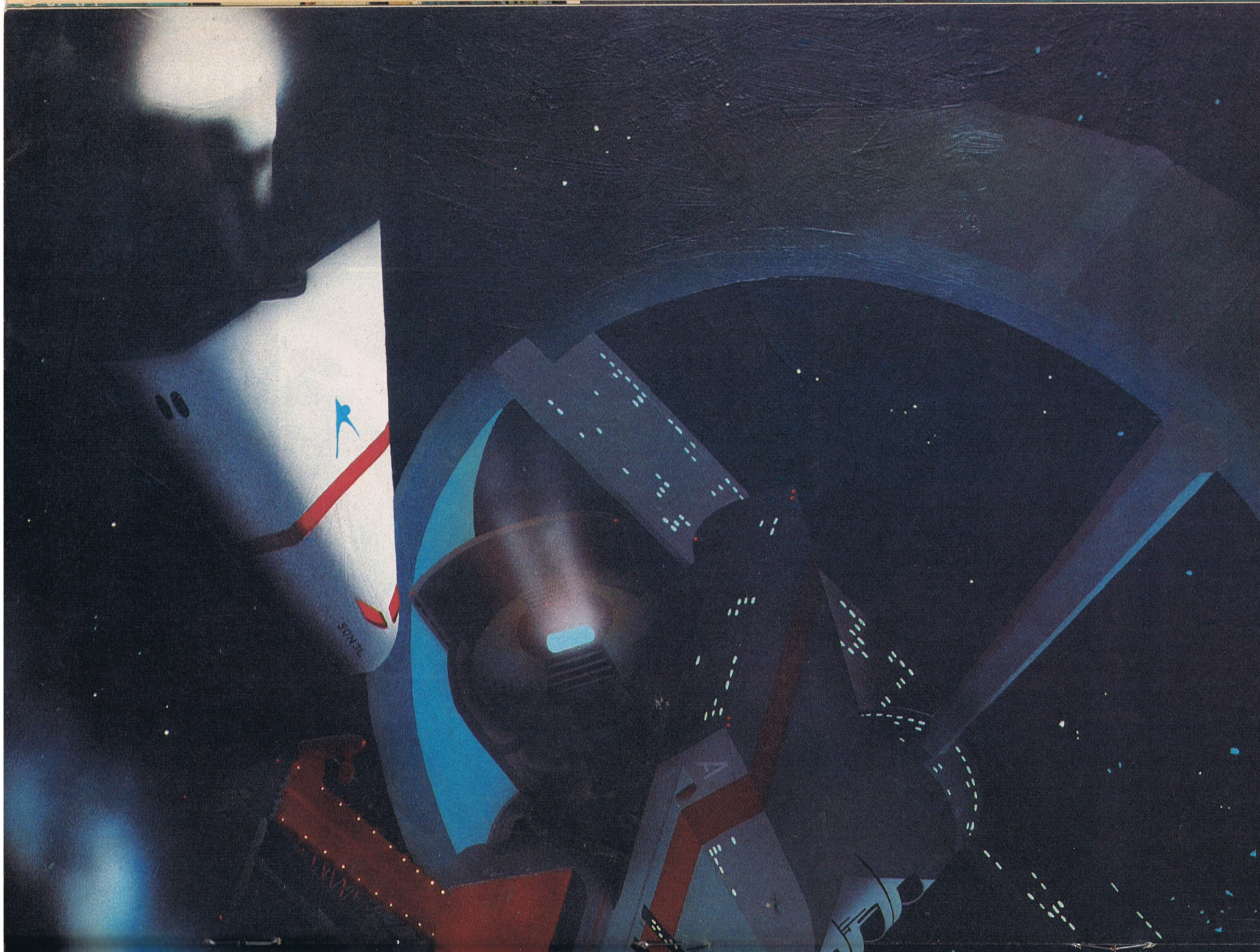
However, financial problems intervened, and Bob found it necessary to find himself a job in advertising. "I decided to keep my illustration as a hobby," he says, "because I thought, if I *have* to paint, it's going to destroy my real urge to do it. It's my creative outlet. If it became my work too, I was afraid I wouldn't like it as much, that it would kill the enjoyment. So I do that to get away from my advertising, when I have some spare time. Hopefully, it will turn into something, but I'm just playing it a day at a time, leaving my directions open."

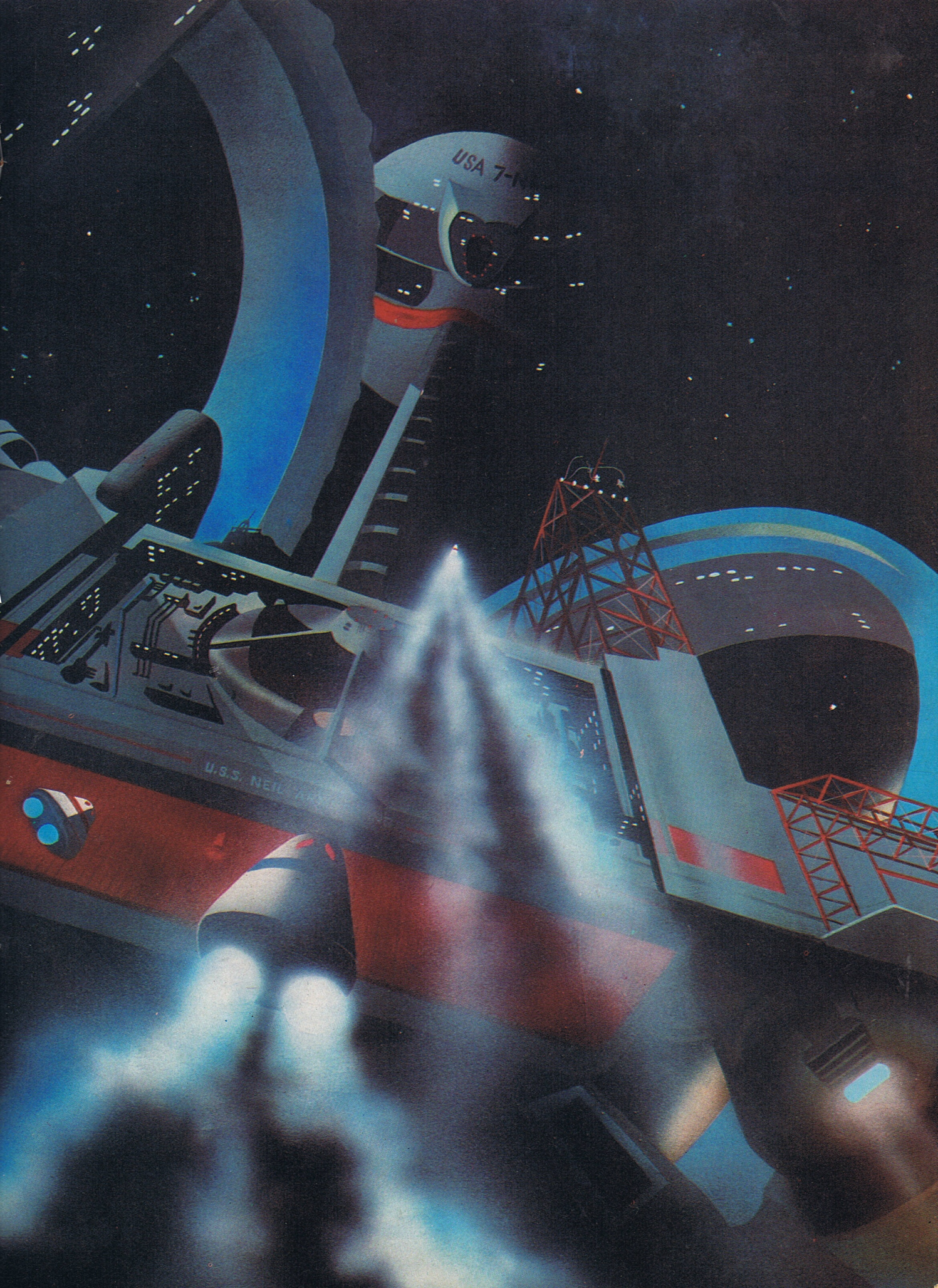
About his painting "Deep Space Ship in Earth Orbit With Jettisoned Landing Bay" (above), Rich says, "Rather than having shuttles docking with the main structure of the ship, a landing shuttle docks with landing bays attached to elevator shafts. In case of an accident such as a crash, the bay is blown free of the main structure to burn out away from the main body of the ship."

The Gallery centerfold, though visually spectacular, needs less of an explanation: A space station named after astronaut Neil Armstrong orbits Jupiter.

It is clear that, in spite of his new career in advertising, Robert Rich has no intentions of forsaking outer space. "One thing about space art," he says, "is that you can take a ship and isolate it in total black, total darkness, and it's a thing of beauty in itself. That's the romantic side of it—the freedom involved."

Centerspread: "U.S.S. Neil Armstrong" © 1980 by Robert J. Rich →

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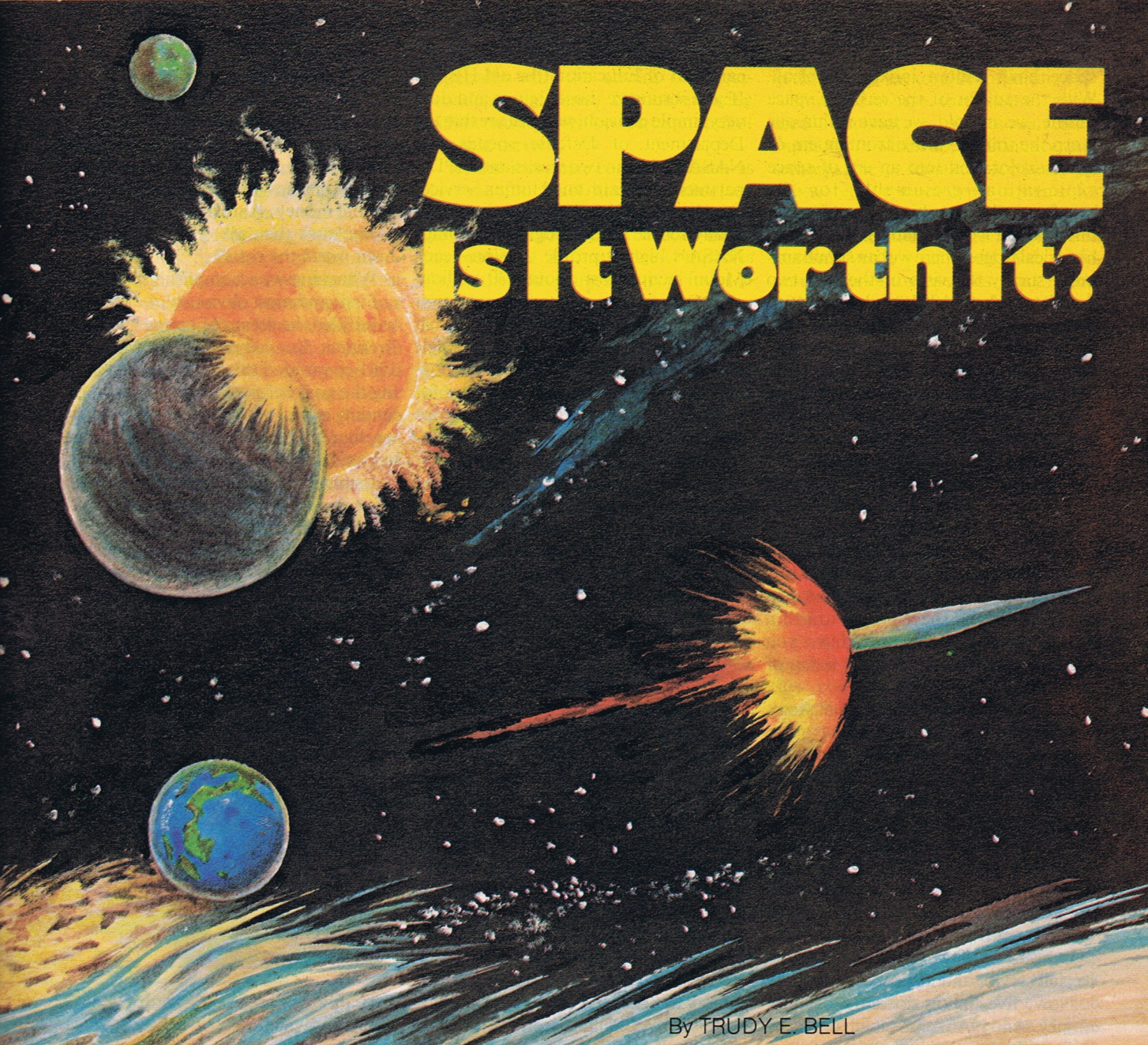


SPACE
Is It Worth It?

By TRUDY E. BELL

On July 20, 1969, for the first time in the 4½-billion-year history of the solar system, living creatures from one planet left their footprints in the sticky alien soil of another. For that was the day when Neil Armstrong and Buzz Aldrin, after drifting for half a week through a quarter of a million miles of the silent eternal spaces that so frightened Pascal, first touched down on the "magnificent desolation" of the Moon.

At that time the first landing of men on the Moon was hailed by some as the most significant event in the history of human evolution since the moment that first ancestral lungfish hauled its ungainly body out of the ocean and rested, panting, on dry land—a quirk of evolution that has ever after dictated the nature of humankind.

But to others, whose vision was filled with the spindly living skeletons in Biafra, the mangled corpses of gangly teenaged boys slaughtered in an undeclared war in Vietnam, the weakly-flopping birds whose feathers were begummed with crude oil, and the violence of blacks and Chicanos sick to death of being poor—to them the dedication of human talent and skill in sending men to the Moon seemed an appalling perversion of priorities. And they cried:

If we can land men on the Moon, why can't we solve our pressing problems here on Earth?

Right now it's particularly crucial that we should examine this poignant question, because today—just 23 years into the Space Age—we are poised at the close of one era and on the threshold of another—and yet the prospects for

space have seldom looked so bleak. With the advent of the reusable space shuttle, we are told, we have within our grasp the tools to move from an era of space exploration into an era of space exploitation—presumably for the benefit of all humankind. Therefore, at this moment we are standing on a unique historical ridge, where we can simultaneously survey the vista of the past two decades back to 1957, and also try to peer into the mists ahead leading to A.D. 2000—which sounds so far, yet is now nearer than Sputnik's first launch.

What have we gained so far from space? Has it been worth the time, energy and money? Is it worth a continuing investment and commitment—or should it be abandoned?

Dollars and Sense

Let's first look at hard facts about cold cash—your tax dollars spent. How much money have you spent to send men to the Moon and space probes to half a dozen planets? How much have you spent to raise the standard of living of your fellow citizen?

The budget for the National Aeronautics and Space Administration (NASA) for the fiscal year 1980 was $5.01 billion. Not all that, of course, has been spent on hardware launched into space. This past year about a third of it went into the continuing development and construction of the space shuttle, a quarter of it to other space science and applications such as satellites and spacecraft, a tenth of it to aeronautical research and development, and a fifth of it to civil service and institutional costs.

Now, five billion dollars is a lot of money. And NASA has a high profile—perhaps higher than any other government agency—owing to the spectacular nature of its mission. But in isolation, without perspective, it is impossible to judge what that five billion dollars means. NASA opponents, wanting to horrify and shame people by the taxes "wasted" on space, concentrate on the staggering word "billions"—far beyond the ken of human feel. NASA, on the other hand, feeling pinched for funds, points out that its budget represents only about a penny from each tax dollar: "Are you getting your penny's worth?"

What is the true picture?

The total Federal budget outlays for the fiscal year 1980 are estimated at $564 billion. Of that, $127 billion, or 23 percent, went to the Department of Defense, and $207 billion or another 37 percent, went to the Department of Health and Human Services and the Department of Education (the old HEW). If you scrutinize those figures and do a very simple division, you will see that the Department of Defense spends one NASA budget in two weeks and the Department of Health and Human Services spends one in nine days. Turning specifically to the Moon program—perhaps NASA's highest-profile mission—each Moon launch cost about $20 million; about this cost the science fiction author Hal Clement remarked: "I realize that such research is expensive; a single Apollo Moon flight would keep the population of this country in cigarettes for fully 15 days, and even in liquor for nearly six."

Several other facts are in order.

In both relative *and absolute* terms the space agency receives today far less taxpayer support than it had a decade ago. It started out in 1960 with about one billion dollars, leapt upward after President John F. Kennedy's stirring rally to the Moon to a maximum of $5.25 billion in 1965, then steadily slid to a low of $3.04 billion in 1974. Only in recent years has it been slowly creeping upward again, barely keeping pace with inflation. In terms of actual buying power, with today's eroded dollars, NASA's $5.01 billion is equivalent to $2.5 billion in 1965.

During this period that NASA support has slipped, between 1970 and 1977 your own weekly earnings increased by 51 percent. Federal income from your taxes has increased by 84 percent. The Gross National Product has nearly doubled. Federal aid to human welfare has nearly tripled. And Federal support of energy has skyrocketed by nine times.

In short, cold hard money facts demonstrate that although five billion dollars is a lot on an individual scale, in the whole Federal picture it represents less than one percent of the whole. Moreover, next to the welfare program the NASA budget is so small—about 1/40th—that it is doubtful that diverting the nation's money from space to keep Health and Human Services going an additional week out of the year would yield significant benefits. Ironically, late in 1978 HEW revealed that it had *lost* $7 billion—one and a half times NASA's budget—due to welfare fraud and inefficiency.

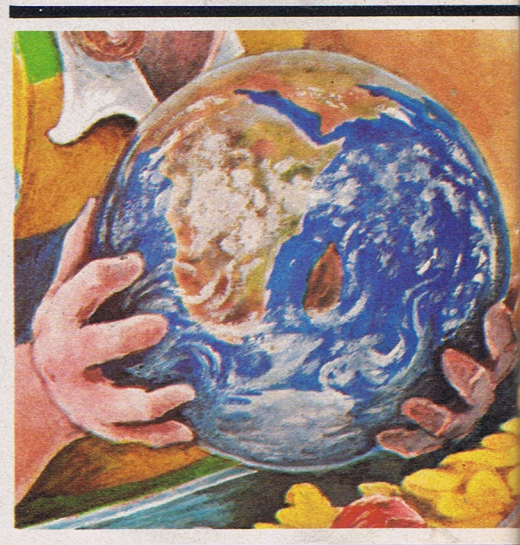
Please do not take my word for it alone: Examine the Federal budget yourself. Bandying about money figures can easily deceive. If you feel adrift, pick up the short superb book *How to Lie With Statistics* by Darrell Huff—a book that ought to be required reading for every 18-year-old registering to vote.

Returns From Space

Analyzing the cost of something is only a third of the job of assessing its value. One must next analyze the returns for the money. And last—and toughest—one must then ask: Have the returns been *worth* the costs?

What have we accomplished in space?

First, and most obviously, we certainly fulfilled the dream of young vigorous President Kennedy, who on May 25, 1961 committed this nation to "achieving the goal before this decade is out of landing a man on the Moon and returning him safely to the Earth." But that achievement was far more than a celestial stunt. Those astronauts, and their successors, brought back some 400 kilograms of extraterrestrial rocks and soil—rocks and soil not subject to the destroying forces of geology and weather—which may have the secret of the sun's long-term history locked within them; that secret may reveal the link between the sun's variability and our Earth's ice ages and tropical interludes, perhaps giving us the key to control our climate.



In the process of sending men to the Moon, we've developed the technology for allowing human beings to survive and work in the alien weightless environment of space for months at a time. In fact, we've discovered that people *like* the incomparable relaxation of zero-g, and regret it when they must return to the imprisoning gravity of the Earth. The pleasure of zero-g encourages medical researchers who would relieve the misery of burn patients who on Earth must lie with their whole weight on their oozing wounds; zero-g may also provide a recovery environment for patients after cardiac surgery, easing the burden

while their weakened hearts heal.

We've also sent chattering spacecraft into the void of interplanetary space, to act as our remote eyes and ears, to explore half the planets of our solar system from close up, and to learn more about the forces that shape our own. In addition, with satellites orbiting Earth above the hot dirty turbulence of the atmosphere, we've looked outward at the rest of the universe at wavelengths our limited eyes can never hope to see: ultraviolet, X-rays, gamma rays. And we have discovered activity on the sun and in the depths of space hitherto never known. It could well be argued that the past two decades have been the most active period of revelation in the history of astronomy since the time of Galileo.

Less obviously, the quest for the Moon and space has created whole new industries—some of them in space itself.

It is no accident that in the 1960s Barry Commoner and others seized upon the metaphor "Spaceship Earth" to describe the fragility and interrelatedness of our whole planet.

People frequently talk of space industrialization as something far off in the future—something that won't come to be until (unless?) we start setting up factories in orbit turning out widgets. On the contrary, if one accepts Webster's definition of industry as "manufacturing activities as a whole," space industrialization is well with us today—and has been for years. Moreover, it's profitable.

Communications satellites are a ubiquitous fact of life; with them in March, 1979, everyone around the world witnessed *live* the signing of the peace treaty between Egypt and Israel. Comsat, the Communications Satellite Corp. founded in 1963 to launch and profit from communications satellites, has been joined in that enterprise by AT&T, Western Union and others. Space communications alone is already a billion-dollar-per-year industry, and is rapidly growing in importance as fuel costs rise. Especially with the advent of direct-broadcast satellites, teleconferencing will increasingly replace certain types of business travel.

Several insurance companies such as Corroon and Black and Marsh McLennan have been insuring commercial launches for more than a decade—making money as all insurance companies do, on the odds being slightly in favor of the house.

Data from the Landsat Earth resources satellites are being phased into the workings of the Department of Agriculture to monitor worldwide food crops to avoid disastrous shortages. In addition, the single largest group of private customers is the oil companies, who analyze the photographs to prospect for energy resources, and who are lobbying for the development of a geological-exploration satellite. In addition, a test program by the National Oceanographic and Atmospheric Administration (NOAA) since 1975 has used satellite data and imagery for monitoring the color of the water to locate the algae feeding grounds of fish, to help commercial salmon and tuna industries on the west coast to better locate their catches. In 1975 alone some 1,000 boats using the data located their catches with a fuel savings of ten percent.

In September, 1978, *Business Week* ran a special advertising supplement on space industrialization, indicating that increasing numbers of corporations see that space promises return on investment. And ECON, Inc. of Princeton, N.J. estimates that when the space shuttle is fully operational, in an average operating year the revenue it draws will exceed $950 million in 1975 dollars—making it rank about 223 in the Fortune 500, and seventh in the U.S. airline industry, somewhere between Delta and Northwestern.

In the process of creating all those new space industries, the spur to space has created new technologies: For example, integrated circuits were specifically invented to pack as much electronic gear into as tiny a payload space possible. The economic and cultural impact of that piece of space technology alone has been enormous. It lies all around you: calculators, digital watches, television video games, home computers for $500 that a decade ago couldn't be had for $10,000, fuel-injection regulators in automobiles to conserve gasoline, temperature-regulators in your home to lower your heating bill. And we're still reaping the rewards: The prices of all those devices are still plummeting—even in the face of inexorable inflation.

Then, of course, there is the "twice-used" technology sometimes called "spinoffs," which are additional gravy: rechargeable pacemakers for heart patients, remote-monitoring systems for hospital patients in intensive care, computerized terminals at cash registers that instantly verify your credit cards, computer reservation systems used in virtually every airline and major car-rental agency, automobile tires for extremely low temperatures (first developed by Goodyear for the Apollo 14 pullcart)—plus thousands of specialized instruments and sensors and manufacturing techniques hidden from public view that quietly add billions of dollars to the economy, provide jobs, save lives, and make things work better.

But the space program has deeply altered our society and ourselves in other ways, surprising ways that are not obvious at all, having to do with the quality of life.

First, consider employment: It is no accident that the 1960s formed one of this country's periods of greatest growth. President Kennedy's injunction stimulated not only NASA. NASA had to go out and contract major aerospace companies to design and build the boosters and control systems and life-support systems. Those companies subcontracted other companies for parts and specific jobs. All those companies had to recruit new engineers to form new divisions to invent out of the blue a lot of the technology that was flown. So although NASA's budget is comparatively small, its leverage is great: At the peak of NASA funding in 1965, for every job at NASA there were more than 11 jobs with contractors alone—not to mention those created elsewhere in the economy, multiplying the effect.

We are seeing the reverse of that stimulus today. Again, it is no accident that in these past few years of high unemployment in the 1970s, many of the people out of work—and on the unemployment roles—are overqualified engineers. Hundreds of thousands of them were laid off by NASA and its contractors, as the employment figures in the space program shrank to two-thirds of their peak level all around the country.

Second, consider civil rights: The spur to go into space transformed the economy of the deep south. The Kennedy Space Center in Florida, the Johnson Space Center in Texas, the Marshall Space Flight Center in Alabama, the Langley Research Center

and the Wallops Flight Center in Virginia, the Michoud Assembly Facility in Louisiana, the National Space Technology Laboratory in Mississippi —all of them accelerated the industrialization of the south. Now, the space program didn't cause the civil rights movement, of course, but a strong case could be made that the influx of new people and new industry, with the nontraditional emphasis on performance instead of rigid roles, helped to speed the transformation of the south.

Third, consider ecology and the environment: Again, it is no accident that in the 1960s Barry Commoner and others seized upon the metaphor "Spaceship Earth" to describe the fragility and interrelatedness of our whole planet, where each individual act alters the balance of the whole. In the eloquent words of Ernst Stuhlinger, the first photograph of the whole Earth seen from space "opened our eyes to the fact that our Earth is a beautiful and most precious island in an unlimited void, and that there is no other place for us to live but the thin surface of our planet, bordered by the bleak nothingness of space. Never before did so many people recognize how limited our Earth really is, and how perilous it would be to tamper with its ecological balance." Nor is that emphasis misplaced. Today, instruments aboard satellites now monitor pollution from orbit. And it is also worth contemplating that for each one-ton communication satellite launched, that means 50,000 tons of copper *not* stripped out of the Earth to lay as cable.

Fourth, consider politics: The space race in the 1970s sublimated the far more dangerous arms race by diverting energy into a constructive competition instead of a destructive one. In fact, it may have helped lubricate international relations between the U.S. and the U.S.S.R., as symbolized by the docking of Apollo with Soyuz in 1975.

Fifth, consider our culture: Through television, color photographs and the printed word, each citizen on this planet —no less than the space program's scientists and mission controllers—has been able to vicariously journey to the bleak lunar surface, the rust-hued rocky plains of Mars, or over the volcanic plumes of Jupiter's sulfurous moon-world Io. Except for the astronauts, no one in this nation has been a space traveler more than you. Any taxpayer who has wanted to contemplate the return of his or her tax dollars to NASA has only to click the knob on the television or look in a national magazine. Few of your other tax investments can claim so much.

Sixth, our venture into space may have provided us—and our children—with a future: to wit, a new frontier. Frederick Jackson Turner, a young American historian around the turn of the century, analyzed the significance of the moving Western frontier in forging "the expansive character of American life." He pointed out, "Movement has been its dominant fact, and unless this training has no effect upon a people, the American energy will continually demand a wider field for its exercise... Each frontier did indeed furnish a new field of operation, a gate of escape from the bondage of the past; and freshness, and confidence, and scorn of older society, impatience with its restraints and its ideas...calling out new institutions and activities." In short, the frontier provided "elbow room"—a psychological safety valve that bled off dangerous tensions and quieted the trigger finger.

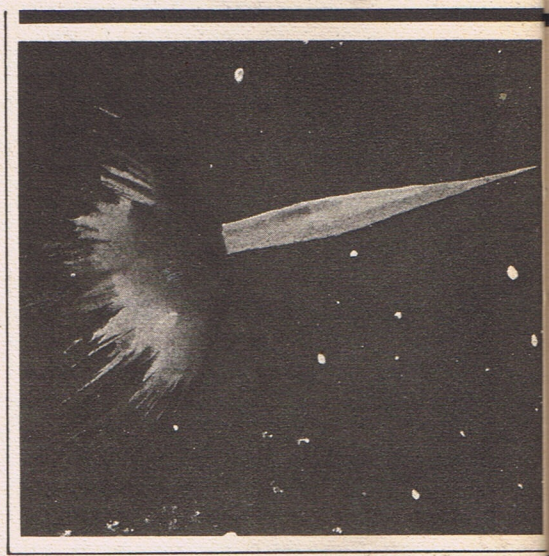
No matter how one feels what *should* be the case, it *is* the case that restlessness is part and parcel of the American heritage. Restlessness stirs the blood from childhood; it begins with the urgency of Christopher Columbus and the hardiness of the first Pilgrims, it sounds through the rhetoric of independence, it breathes through the lore of Daniel Boone and Annie Oakley, it fidgets through the history of the gold rush and wagon trains, it strives through the pragmatic philosophy of betterment from Benjamin Franklin through Horatio Alger right up to Norman Vincent Peale. Wrestling with a frontier *is* the American myth. Unless you lock the libraries and deny history and burn Westerns, that restlessness of American character is not likely to change, even though times have changed. Why, *Star Wars* itself was a space-age Western, not only in specific details but also in its whole rugged, self-reliant spirit of laughing at death-defying odds. Gerard O'Neill's appeal, to American youth at any rate, may be deeper than he realizes when he calls his space settlements the high frontier.

Has Space Been Worth It?

Now that we have analyzed the costs of past space exploration and the returns from it, have the returns been *worth* the costs? Do they warrant further investment?

First, be warned: It is exceedingly difficult to quantify the full economic cost-benefit ratio of any social or technological program, the space program included. Do you limit the analysis only to the subcontractors and entrepreneurs who capitalized on a bit of space technology to shave costs or make a bundle? Or do you extend it to include the consumer, who buys a pocket calculator which didn't exist before and so has no comparison? And although you can estimate how many millions of orange trees have been saved by weather-satellite advance warnings of freezing cold fronts, how do you hang a dollar figure on the human lives that have been saved by pacemakers and hospital remote-monitoring systems, which also sprang from the space program?

Because of such thorny difficulties in drawing the line—or even in tracing a development's diffusion—any cost-benefit ratio you can directly compute represents only the *minimum* ratio that can be derived; that is, the cost-benefit ratio is no less than what can be directly computed, and is probably a good deal more.



In 1975 Mathematica, Inc. traced four specific examples of the secondary application of NASA technology. The four examples were integrated circuits, cryogenic multilayer insulating materials (first invented for space suits), gas turbines in electric power generation, and a structural-analysis computer software package called NASTRAN. Mathematica found that by the early 1980s the return to the national economy from the secondary applications of those four examples *alone* would be almost $7 billion—thus paying for about one and a half years of the space program's existence.

The next year Chase Econometrics Associates of Bala Cynwyd, Pa. calculated that if the Federal government increased the NASA budget by one billion (1958) dollars between 1975 and 1984, by 1984 unemployment would be reduced by 0.4 percent, because the in-

creased funding would create 800,000 new jobs.

And in 1977 the Denver Research Institute conducted a cost-benefit analysis of NASA's Technology Utilization Program, and concluded that the benefit-to-cost ratio is at least six to one—that is, for every dollar invested in the program, there is a net gain in tangible benefits for the economy of six dollars.

Our Problems on Earth

Let us now turn to the original question: If we can land a man on the Moon, why can't we solve our problems here on Earth?

Problems—we in our sordid overcrowdedness, befouling the air we breathe and the water we drink, cheating the half of humanity cursed with two X-chromosomes or a bit of melanin, watching our fellow human beings starve; living under the clammy numbness of the nuclear threat. . . . Problems—what a stark understatement.

> The space program has deeply altered our society and ourselves in other, surprising ways that are not obvious at all, having to do with the quality of life.

If we can land a man on the Moon, why *can't* we solve our problems here on Earth?

First, take a close, quiet look at that question. Are those two feats—landing men on the Moon and alleviating Earth's ills—comparable in scale and execution? The first, spectacular as it is, is solely a technological problem; the second is largely a political one. Technology obeys the uncompromising laws of physics; politics obey—or violate—the shifting laws of man. As Ben Bova has pointed out, the logistics of landing two men in a crater on the Moon are not at all the same as the logistics of negotiating how to divide up the Sinai. There are no rights of way to the Moon, no differing ideas on how to get there. Technological problems are *much* easier to solve than people problems.

But, second, the assumptions behind the very word "problem" go deeper yet. At the annual meeting of the American Association for the Advancement of Science in Houston in January, 1979, Joseph Weizenbaum of the Massachusetts Institute of Technology pointed out that before World War II the word "problem"—in the sense of meaning any people-related dilemma ranging from marital difficulties ("I have problems with my wife") to tense political situations in the world—was scarcely used. Only after the first crude computers were developed in the 1940s did the word "problem" come into vogue, implying that somehow human problems *are* like the problem of sending a man to the Moon, and that social problems can be "figured out." Early ecstatic books about computers even promised so much; the film *Colossus: The Forbin Project* revolved around exactly that assumption.

Human problems can almost never be "solved" in a mathematical sense. They instead involve an exchange of one set of more acceptable difficulties for another. For example, the man unhappy in his marriage can divorce his wife—but that doesn't "solve" the "problem"; it merely gives him a different set of more acceptable "problems." The word "problem" when applied to human miseries is therefore only a *metaphor*—a metaphor that, tragically, has been taken literally, has shaped our thinking and perceptions, has misled our expectations—and has created disillusionment.

Third, the question carries with it the implication that somehow *not* going into space *would* alleviate our social ills: that by diverting all the money and human energy now yearning starward we *would* end poverty and hunger and political unrest. Most commonly the phrases expressing those thoughts claim that we must "reorder our priorities" to unify towards one goal, acknowledge "limits to growth" and "set our house in order" here on Earth before going into space. The basic difficulty here seems to be one of communication. No one seems to have made it clear yet that judicious development of space, far from being a diversion from improving the quality of human life on Earth, can directly *help* set our earthly house in order: by warning of weather disasters, monitoring pollution, keeping watch on crops, finding new resources, bringing education and medical aid to remote locations, and so much more.

Let us, however, examine what might happen if Federal funding to space—both civilian and military—were stopped tomorrow.

Well, as weather satellites weakened and died one by one, we would start to lose greater revenues from crops, as once again we were forced to rely only on airplanes and on ground weather stations for forecasts. The joint long-term experiment between NASA and the Department of Agriculture to use Landsat data as a means of predicting world food production—giving us a jump in anticipating world market fluctuations—would be abandoned, leaving us back in the 1950s.

We would be at the mercy of other nations in terms of defense; it is naive to discount reports of hunter-killer satellites and particle-beam weapons in orbit. Allen H. Neuharth, in a recent issue of *Insight*, even goes so far as to suggest that we might be sleeping now as we were 40 years ago at Pearl Harbor: "No one told the Russians the Moon was the finish line."

All new projects, including the solar-polar satellite mission and the Earth radiation-budget satellite, would be killed, eliminating any attempt to learn the link between the sun and climate, robbing us of anticipating and preparing for any coming ice age or warming period.

Moreover, some 23,000 NASA employees would be out of work, along with 104,000 others in contracting firms; the firms would be crippled in their communities; their communities would suffer some shock from so many people cutting back their spending while on unemployment—and thus the ripples would expand outward. Even if all those aerospace people were offered excellent jobs directly related to alleviating disease, hunger or energy shortages, it is naive to think they would all dutifully accept those jobs; it is far more likely that a fair fraction of those engineers, scientists and aspiring young astronauts would migrate—taking their experience, know-how and vision—to Canada, Europe, China or Japan where space programs *are* being vigorously pursued—creating a drain of talent and brains from the U.S.

The Future Is Yours

Is space worth it?

Although my own convictions are undoubtedly clear, each person must evaluate that question individually, keeping in mind several cautions.

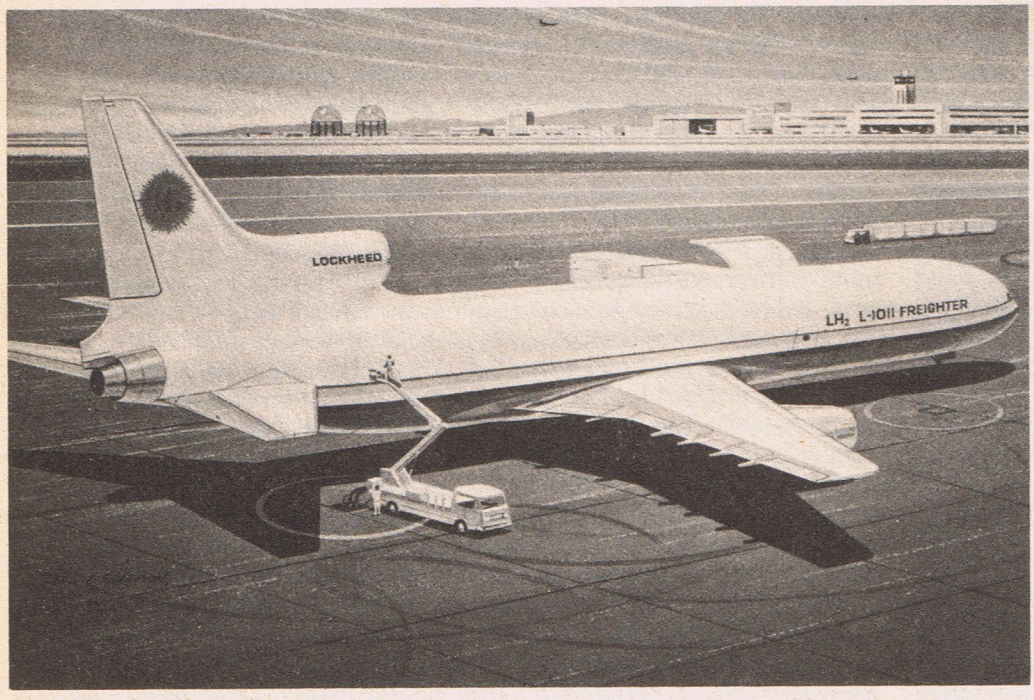
First, Americans tend to be faddish, whereas the Europeans and the Orien-

(continued on page 56)

Aircraft *(continued from page 31)*

It is likely that the initial applications of very large aircraft will be military. Once the prototypes are tested and used by the military successfully, commercial aircraft builders will follow the lead. There is a theory that convential aircraft designs will dominate this stage of development, then with the necessary technology base, drastic redesigns will appear. Nuclear fuel will not be utilized until changes in weight and safety are made.

A 1979 NASA study concludes that the market for air cargo is growing faster than the market for passenger travel. Coupled with the fact that military preparedness is a major concern these days, the space agency reports: "...current views are that the development of a new, large cargo aircraft may occur late in this century." NASA suggests a two-phase program for establishing a technology base for building larger aircraft. Phase I includes the setting of perameters, making the necessary technological requirements and considering the remodeling of terminal systems to compensate for the large vehicles. Just what the future course for Phase II should be is the final task under Phase I.



ART: COURTESY LOCKHEED

A freight-carrying version of Lockheed's L-1011 TriStar, modified to use liquid hydrogen fuel. It carries 106,300 lbs. over a miximum distance of 3,600 nautical miles. The length has been increased by 34 feet to accomodate the larger fuel tanks. Liquid hydrogen has been used to power space vehicles for years and is seen as the future alternative to dwindling petroleum supplies.

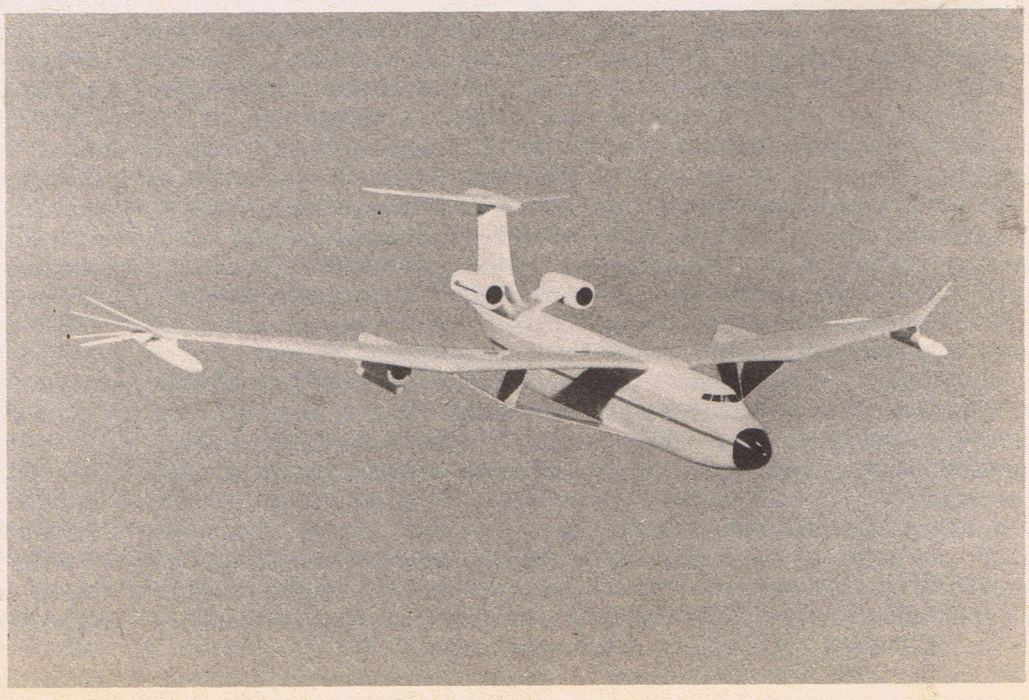


PHOTO: COURTESY NASA

An energy-efficient cargo craft of the future, one of several designs from NASA's Langley Research Center. This concept features finger-like extensions on the wingtips that greatly increase the craft's geometric aspect ratio, the relation between the span of the wing and its width. The plane would have a 415-foot wing span.

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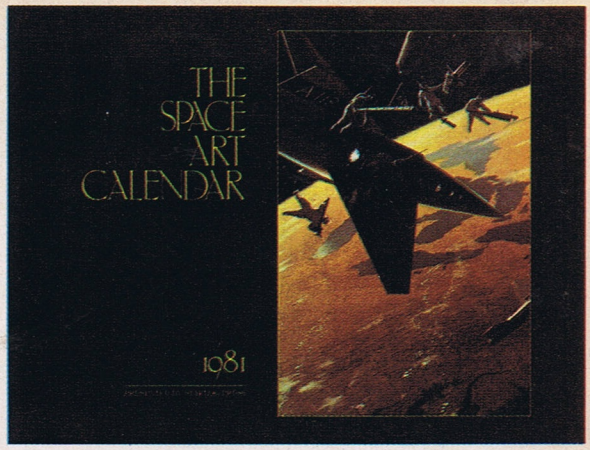

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Flashy Designs

By ED NAHA

The New York offices housing Dino De Laurentiis' production of *Ragtime* are anything but futuristic. Located near Manhattan's traffic-infested Columbus Circle, they are littered with paper-strewn bulletin boards, constantly ringing phones and cluttered desks. In the midst of this madhouse sits art director John Graysmark. Perched in a room housing countless turn-of-the-century drawings and designs, Graysmark notes the irony of his profession. "This sketch here," he says, pointing to a sea scene, "takes place in Atlantic City, New Jersey, in the early 1900s." He emits a small chuckle. "I've come a long way from the planet Mongo."

Just one year ago, Graysmark was laboring with production designer Danilo Donati, to create the exotic visual imagery needed for De Laurentiis' forthcoming science fiction film, *Flash Gordon*. The movie, based on the original Alex Raymond 1934 comic strip, was originally planned two years ago but ran into a myriad of snags. Director Nicolas Roeg left to assume the directorial reins of

The diabolical ruler of the planet Mongo, Ming the Merciless, holds court. Replete with some of the grizzlier

denizens of any universe, the set exemplifies the "flashy" design sought by art director Graysmark. **Inset:** Ornella Muti as Ming's daughter, Princess Aura.

Mongo's triumvirate of evil: Emperor Ming, Princess Aura and Killer Klytus. Ming's so bad, he turns people to stone with his ring.

A bevvy of Mongo's beauties grace Ming's court. Describing De Laurentiis' work, Graysmark says: "Dino went all out . . . the costumes are dazzling."

another production and with him exited the film's production designer. When Danilo Donati entered the picture, the production finally took shape. And those shapes, Graysmark states flatly, should please Flash Gordon fans worldwide.

"Danilo," he explains, "was perfectly happy to go back and study the old Alex Raymond comic strips and see how those designs could be transferred to the screen. I think we've been quite successful."

Bringing a comic book hero, along with his comic book backdrops, to the screen was no easy task, however. "We were very much aware that we were going against the grain in terms of science fiction visuals," Graysmark states. "Since *2001,* most science fiction films have had a very NASA-like, futuristic feel to their hardware and design. This film isn't like *2001* or *Star Trek*. We're not in the future, really. We're in the future as seen from the 1930s. We're just to the side of tomorrow.

"Alex Raymond's work is the 1930s image of what the future may hold. We tried to follow that vision faithfully in terms of visual style. The architecture in the original strip was American modern, sort of like the Chrysler Building in New York City. The costumes varied from location to location in the strip. The forest people, for instance, dressed a bit like Robin Hood. Some of that didn't work too well on film. The funny little hats looked strange on the men. So we changed them a bit. But, in the main, the film is based on Alex Raymond's drawings. We have feathered Hawkmen who fly and lizardy Aquarians and people who live in Frigia.

"The aggravating thing about adapting Raymond's drawings to the screen is that you always think you see more than what's really there. He has these exotic locales on paper but when you actually look at them carefully, there's not that much drawn. He suggests more than he presents. On film, of course, everything has to be detailed."

In order to capture the flavor of Raymond's original creation, Graysmark and company allowed themselves free use of their imaginations in creating environments totally removed from Earth and Earthly standards. "You really can't adhere strictly to science fact in a movie like this," he shrugs, "because so much of the original strip was sheer, wonderful fantasy. In the movie, the journey through space takes Flash, Dale and Zarkov through the known areas into the unknown areas surrounding Mongo. That part of space is fairly dreamlike. They pop through our galaxy so fast, it will make your head spin. Once they leave recognizable space, they leave astronomical tradition behind. The dimly lit, star-studded void that we recognize as our space gives way to an entirely different type of universe: a swirling, colorful cosmos. It's totally unreal. They don't visit dead planets. They visit these bright, lively kingdoms that are practically mythical.

"Mongo's planetary system is a lot smaller than ours. The planets are clustered together. So Zarkov's ship gets to pass these fantastic planets that are, in reality, separate kingdoms. The planets are not necessarily spherical, either. In fact, Arobira, the forest planet, is half a sphere. It's cut in half. Zarkov's ship rounds a corner, thinking it will zip around this global world and they discover that it's flat on one side! It's shaped like a bowl and it's down in that bowl that the gigantic forest of Arobira stands thousands of feet in the air.

"Everything in the movie is larger than life. Ming's palace, for instance, is red marble with these swirling gold inlays as big as autos. It doesn't have doorways that open automatically, zip and zap. There are massive archways. The whole place is medieval in a way but, then again, that's how Raymond envisioned it. I mean, in the comic strip, Ming's prison was something out of the dark ages: a dungeon with chains and things. The fact that Ming can turn people into stone with a turn of his imperial ring makes shackles quite unnecessary. But Raymond didn't see it that way. Neither do we.

"Klytus, Ming's aide de camp, is also a very medieval character. He imprisons Flash in chains and then releases him by waving his ring and making the chains disappear.

"The city of Mongo itself is just amazing to see. It's like Manhattan, only bigger. It rises out of this enormous plane of mist. In the background there's this explosive, ever-changing sky. The moon of Mongo zips by in the background. Out of this red marble city comes these glowing tubes, horizontal elevator shafts, that run through the seas of mist. It was quite a challenge coming up with that sort of scenery."

Although Graysmark tends to downplay the struggles involved, the creation of every Gordon nuance proved a brain teaser for the staff in that all of it—from Ming's palace to the Hawkmen's outfits—had to be out of this world; figuratively and literally. None of it could be readily identifiable with reality or, for that matter, science fiction filmdom.

"We tried to be totally original within the context of Raymond's designs," Graysmark says, "and we had a lot of little headaches en route. The weaponry gave us a bit of a time. They were all done in rather baroque style, not in art deco. We had to make them beautiful yet realistic. All the weaponry was indigenous to the kingdom of its origin. In Arboria, the soldiers used very powerful crossbow items. The sword handles were made of wood. The Hawkmen's weaponry had to be birdlike.

"We took one piece of hardware directly from the comic strip. It's terrific to look at. It's this large machine that drains Zarkov's mind and, supposedly, refills it with nasty thoughts. It's like an enormous radio valve, the old fashioned kind. It was very modern for Raymond's day, though.

"We even had to come up with new concepts for our ray guns. They couldn't be normal ray guns, lasers or phasers that slice through you. Ours send out beams that end up as explosive charges. Frank Van Der Veer has come up with a lot of great ray effects. They just don't go pow and zip. They sail through the air and oscillate. Within that oscillation, there's a second color that spirals. When the ray reaches its end point, it blows up."

Graysmark pauses to reflect on the project. "I can't tell you the trials we went through to get this all right. We tried to get this colorful, alive look to everything. This film has a warm look to it. It's not cold and hi-tech. Flash's spaceships, for instance, as conceived by Raymond, were large and ornate and big enough to have people walk on them on these outside passages. We kept them in the movie. When the Hawkmen fly up and attack these massive vessels, you get a wonderful hand-to-hand combat effect.

"The spaceships are all very sleek. We know now, of course, that for space travel there is no real need for that slipstream design. Just look at the vehicle that took Neil Armstrong off the surface of the Moon. That thing couldn't do 30 mph on the Indianapolis track, it's so cumbersome. But all of Raymond's ships had fins and shiny do-dads. Ours do, too."

The architectural problem inherent in re-creating Raymond's wonderful fantasyscapes were subsequently translated into physical hurdles once the film got underway. Since much of the movie's action takes place on almost surreal planets, large sections of sets were built. The rest of the area was left for the special effects men to concoct for the final print. And that set-up, in turn, rat-

tled a few landlubbers.

"One of our biggest problems," Graysmark smiles, "was in trying to get people to *relax* when they showed up to shoot on a new set. What they saw when they walked in was quite a bit of set but an awful lot of blank, blue space, too. There's a certain hesitancy about shooting in a situation like that. You have to react to and act around elements that will not appear in the film until months later. The rest of the sets and the action was eventually provided by Frank Van Der Veer in Los Angeles.

"The biggest stumbling block we encountered, however, had to do with Earth geography and not outer space. We were spread out over three large studios in England: EMI, Shepperton and an enormous hangar that Dino had rented in Surrey. So we were filming in three studios that formed a triangle; each being some 30 miles from the other.

"That presented difficulties. The exterior of Ming's battle rocket was at Surrey; the interior was at EMI in Borehamwood and the miniature of the whole thing at Shepperton. It took an enormous amount of skill and patience to get all three constructions to match each other. Each group of people had to use the same type of paint, etc., to bring the effect off. Whatever was done on the exterior had to be duplicated on the model and vice versa with allowances made for the interior sets. What would be easy for one group to do proved difficult for another. Since the model makers were way ahead of the large set builders, we occasionally had to approach them, very nicely, and ask if they could modify their ship to make things easier for the interior group. It was a pain in the neck at times to have things stretched out like that. We survived, though."

It's clear from Graysmark's tone of voice that the film veteran (*The Man With The Golden Gun, 2001, March or Die*) is totally delighted with *Flash Gordon*. "It was great fun," he enthuses, "a 1930s dream-come-true. You see, all our main ideas are from the comic strip but they've been updated just a bit, which makes it even more fun. In the original version, Flash was an international polo star. He was flying along in a two-engine propeller plane with his fiancee, Dale Arden, when they were hit by falling meteorites; forcing them to crashland near the house of crazy scientist Zarkov.

"In our film, Flash is a football player for the New York Jets. He's going on holiday in a small, domestic airliner, a seven or eight seater. Also onboard is this travel agent, Dale Arden, who's afraid of flying. She's also afraid of Flash, since he has a reputation for being a ladies' man. The airplane is suddenly caught in this strange turbulence. The audience sees that a swarm of red hot meteorites are slamming into the Earth but Flash and Dale don't know what's causing the problems.

"The plane gets caught up in this terrific maelstrom. Dale's scared out of her wits and Flash tries to bolster her spirits. The plane spins out of control. Flash takes the pilot's seat. He's had flying lessons but, unfortunately, he hasn't gotten to the part where you learn how to land. He executes a very haphazard landing near the home of Zarkov.

Conniving Kala, as portrayed by Italian actress Mariangela Melato. "Kala is cold, and cruel, strong and very strange," says Melato. "Normally, I play normal women."

"Zarkov is an ex-NASA scientist who had been part of the U.S. space program. He has theories concerning the origins of strange Earthly phenomenon, a rash of earthquakes, storms and the like, that are considered contrary to science. He is asked to resign from NASA. He builds a rocket to get to the source of these disturbances, the planet Mongo. Again, here's the anomoly of it all. He's an ex-NASA man who builds this Alex Raymond art-deco ship with no NASA gadgetry in it whatsoever. The hardware is not, repeat, not *2001*.

"Zarkov's ship eventually lands in front of the city of Mongo. They crash on this amazing golden plateau overlooking Ming's palace. Then fierce palace guards, space samurai, appear. Zarkov tells Flash to leave the ship and act like a friendly American. Everyone likes a friendly American. Flash steps out. 'Hi. My name is Flash Gordon and I'm an American.'

"The guards are not impressed. 'Oh, really?' Zzzzzzzzfpt. They toss this gauntlet at him that throws him to the ground, pins him down and very nearly kills him. Flash just glares at Zarkov. 'Thanks a lot, doc.'

"Then, when Flash is first captured by Ming in the great chamber, he's surrounded by all these strange creatures. Being a football player, he tries to break free using his brawn. He begins darting in and out of the crowd as if he was running for a touchdown. Dale, on the other side of the hall, starts jumping up and down like a cheerleader. 'Go! Go! Go!' Ming just looks at these Earth creatures with a very bemused attitude. They are obviously raving idiots."

Graysmark erupts into soft laughter. "Delightful."

Although the *Flash Gordon* production stands to be a very opulent one, many fans of the strip and the science fiction genre are somewhat apprehensive about its quality; concerned by the fact that Dino De Laurentiis is producing it. After all, the moviemaker didn't exactly enhance the image of King Kong when he tackled that cherished piece of Americana.

Graysmark sees no source for the concern. "I know there are some who are worried about the film," he shrugs, "but Dino went all out on this one. He wanted it perfect. The movie is fun. It makes you smile. You look at these sets and there's no way you're going to take them too seriously. And the action goes with the scenery. It's made to be lighthearted. The costumes are dazzling. The scenery is eye-boggling. We've tried to take the core of the Alex Raymond strip and distill it into a movie format. It was very lovingly done. It should please dreamers of all ages."

Graysmark allows himself to slowly be pulled from Raymond's fantasy world and placed back into reality. New York City. Traffic noises. He stares at the drawing board before him. A 1900s sailing ship sits frozen on paper. "But now," he sighs, "back to Atlantic City."

There's never a Hawkman around when you really need one.

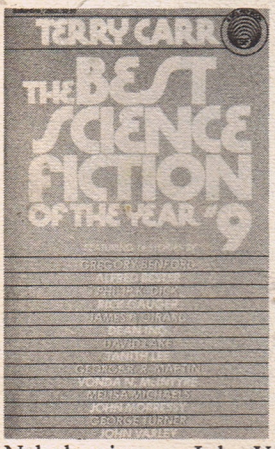
By BOB MECOY

The Year's Best

Carr's Best

Every year about this time we finally get a look at what the local moguls consider to be SF's greatest hits—for last year. Now, the TV networks, the newspapers and *Newsweek* may have managed to get their annual wrap-ups out in the first few weeks of the new year but you have to understand that book publishers just can't stand to be rushed.

Well, the wait, onerous though it may be, has been worth it. Both Terry Carr's and Donald A. Wollheim's "best" collections make it look like we had a really good time in '79.



Carr's **The Best Science Fiction of the Year #9** ($2.50 in paperback from Ballentine/Del Rey) has a contributor's list that runs from such perennial faves as Alfred Bester and Philip K. Dick to a couple of 1978's Nebula winners, John Varley and Vonda McIntyre, on to newcomers Rick Gauger and Melisa Michaels making their professional debuts.

The collection opens with Bester's superbly sardonic tale, "Galatea Galante, the Perfect Popsy." Once there were lots of stories where impudent machines talked back to their imperious inventors (Henry Kuttner's Gallegher stories contain some of the best examples of such cybernetic sass). Here, Bester does a biological update of that line with an incredibly imperious inventor of creatures made to order (mostly spectacular females it seems) and a newly invented female (the title's perfect popsy) who is too much of everything for everyone except her inventor. This is a flip, fantastic little joke and Bester's arch style is a delight.

Carr follows this light offering with George R.R. Martin's "Sandkings." If you missed this story's first appearance, then this is reason enough to buy the book. Martin's protagonist is a thoroughly distressing gentleman who sets himself up as a god for a little world in a bottle, then does terrible things to his true believers. The problem comes when these mighty mites escape and grow into something as gruesome as their insane god's imagination. This striking piece of horror has been optioned by some Hollywood folk, and if the silver screen version (should it ever materialize) is even a fraction as frightening as the story then you can look forward to having the stuffing scared out of you twice.

SF's enthusiasm for the third industrial revolution's move into space is evidenced by Dean Ing's "Down and Out in Ellfive Prime" and George Turner's "In a Petri Dish Upstairs." Ing has put together a survival story sure to intrigue all O'Neill fans. And Turner has composed a truly Machiavellian declaration of independence for spacefolk. Both stories are asking the same question, though—How are ya gonna keep 'em down on the Earth once they've been up there? And they both come up with the same answer—don't even try.

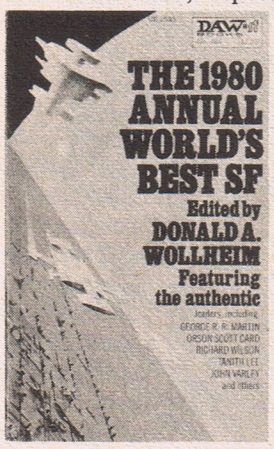
John Varley's "Options" and Vonda McIntyre's "Fireflood" are both up to their prize-winning standards. Gregory Benford's "Time Shards" makes a guess about recorded history and messages to our descendants that holds a couple of funny surprises. And Rick Gauger's "Vacuum Packed Picnic" promises that human sexual responses will cause as much trouble on the Moon as they have down here, as a prurient picnic results in near disaster.

All this plus Tanith Lee's "The Thaw," Melisa Michael's sterling debut, the first new Dick story in all too long and much more makes for the usual strong collection from Mr. Carr—something you shouldn't miss.

Wollheim's Winners

Donald A. Wollheim has probably been picking winners in the annual SF sweepstakes longer than most of his audiences have been tying their own shoelaces, and **The 1980 Annual World's Best SF** ($2.25 in paperback from DAW) is a striking accomplishment even for him. The tone of this collection is calmer, less spectacular and more contemplative than Carr's and it possesses a unity that's hard to accomplish in such assemblages.

Wollheim opens with two stories about a loss of faith—George R.R. Martin's "The Way of the Cross and the Dragon" (a good year for this gentleman and deservedly so) and Somtow Sucharitkul's "The Thirteenth Utopia." In these two stories, two true believers turn from their faiths for a new lie and a first truth, respectively. Both are strong stories and an excellent beginning.



D.A.W. follows up with John Varley's "Options," a story that traces the evolution of a family as one of the partners explores her option to be whichever sex she chooses, and makes you understand why she chooses both. This is a challenging story that ranks with the very best Varley has offered.

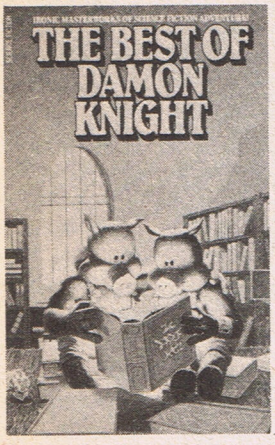
Sadly, Varley's beauty is followed by one of Orson Scott Card's bathetic offerings: this one titled "Unaccompanied Sonata." Happily, the sequence is rescued by Richard Wilson's elegiac piece "The Story Writer." Here, we watch an aging writer create a world, endanger it, save it and then retire into this figment of his imagination made real. It serves as a fitting centerpiece in this catalog of hopes and dreams.

Tanith Lee's "The Thaw," Larry Niven and Steve Barnes' "The Locusts," Ted Reynolds' "Can These Bones Live," Connie Wills' "Daisy, In the Sun," Richard Cowper's "Out There Where the Big Ships Go," and Joanna Russ's "The Extraordinary Voyages of Amelie Bertrand" fill out this extraordinary collection.

Wollheim has put together a selection of stories from last year that shows SF looking for more than another gimmick, another high-tech quick fix. He's found writers looking to the human imagination for solutions and possibilities, and it makes '79 look like a very good year.

Days of Knight

One of the things that doesn't happen every year is a new collection of Damon Knight stories. All too many readers know Mr. Knight only as the editor of the outstanding *Orbit* anthology series or the author of lyrical, learned SF criticism. (*In Search of Wonder,* a collection of his essays, is a classic of the genre.) He is, though, a fine if not prolific writer of ironic, knowing fiction and **The Best of Damon Knight** ($2.50 in paperback from Pocket) sums up a sterling career.



Beginning with his 1949 "Not With a Bang," possibly the funniest ever look at a bittersweet end of the world, Knight leads readers through two decades of his work, offering a chuckle here and a contrary catastrophe there.

You may recognize these stories. "To Serve Man" distills all our incipient paranoia about what those peace-loving, pleasant alien invaders (a la *Close Encounters*) really want into a cosmic giggle. "Extempore" and "Backward, O Time" take two divergent looks at time travel, while "The Handler" puts one of those behind-the-scenes people out front just long enough for us to see that the pretty talking heads we watch on the boob tube are just as hollow as we always thought.

The last two stories in this collection—"Masks" and "Down There"—are dark looks at what men can become. In "Masks" a man has lost his body and science has given him a new one. He understands, though, that he's no longer human. "Down There" sketches a society which has forgotten that imagination is part of being human and follows one man as he searches for a last bit of mystery in the dark corners of his world.

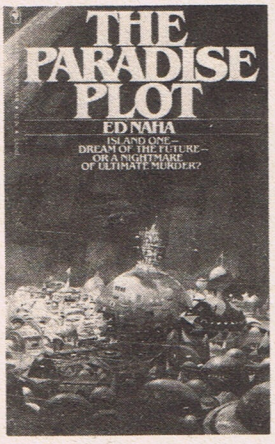
Knight may not be one of the genre's most prolific writers, but he has a strong and singular voice that should be noticed. Here is a career summed up in 22 stories, every one a gem.

Spacey Cynic

Among this year's new names is one that every faithful FUTURE LIFE reader should recognize—one Ed Naha, the recently departed co-editor of this noble mag.

One of the more wizened young cynics in publishing, Naha's first novel is **The Paradise Plot** ($2.25 in paperback from Bantam). This is the first adventure (in a long series, Naha hopes) of Harry Porter, ace reporter for the last newspaper in America and atavistic curmudgeon without peer.

Harry works for the *Herald-Times-News* and as their top reporter (so many reporters have gone over to TV that he may be their *only* reporter), Harry's the natural choice to cover the tenth anniversary of Island One—the United States' first space colony. However, Harry is rather reluctant, since he's fresh out of a mental hospital and has never even liked to fly. But when his editor promises him a scandal in paradise, Harry can't resist.



When he gets up there, Island One looks like paradise. The publicity flack tells him it is paradise. And when Harry's guide turns out to be an old girlfriend, Harry thinks the place might just have a chance. But Harry just keeps stumbling onto little bits of hell up there in paradise—a dead cop, a cover-up, and a little too much mayhem headed in his direction. Fortunately for Harry and Island One, his greatest talent is survival.

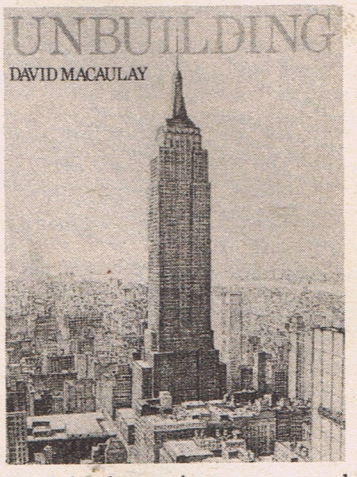
Naha has put together a wisecracking reporter, a mess of murders, a little paranoia and a sense that the future might just be as ridiculous as the present, and has come up with a fast-moving mystery played out in a well-conceived colony. Try it—I think you'll like it.

Anti-Architecture

Another gentleman who thinks that the future might be quite ridiculous is David Macaulay. His new book, **Unbuilding** ($9.95 in hardcover from Houghton Miflin), is hereby offered as evidence.

Mr. Macaulay, artist and author, transports us to 1989, when an Arab prince named Ibn Smith buys the Empire State Building and then announces that he plans to take it home with him. We may not learn much about the perilous times, but we learn everything about the Empire State.

Constructing these 86 floors of steel, concrete, limestone and glass at the



height of the depression was as much an ego trip as an engineering marvel. Macaulay demonstrates that the unbuilding offers equal challenges and rewards as he shows us the emerging skeleton of this landmark and details the epic organization and teamwork that goes into such a disassembly.

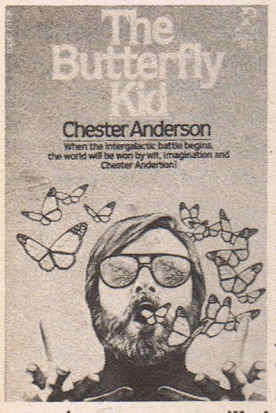
Mr. Macaulay's artwork is as strikingly lovely as it was in his earlier offerings, *Cathedral, Pyramid* and *Underground,* and his humor is still as quirky as it was in last season's *Motel of the Mysteries.* All in all, this is a marvelous mistreatment of one of the architectural wonders of the world. It's a handsome, funny book that will change the way you look at the buildings in your life.

Psychedelic Sci-Fi

Now if Mr. Naha or Mr. Macaulay had paid any attention to the efforts of Chester Anderson they would have understood that the future will not be simply ridiculous—it's gonna be absolutely outrageous. If you don't believe me, then take a look at Mr. Anderson's **The Butterfly Kid** ($2.25 in paperback from Pocket).

This book opens with Chester Anderson (there are two, one in the book and one writing it) stumbling onto a young hippie type sitting in Washington Square creating butterflies. Now, Chester is a

curious sort and engages the young man in conversation. What ensues is a city paralyzed by millions of exotic, erotic and sometimes monogrammed butterflies, a pompous bear of a writer given a halo, a slimy quisling given the opportunity to change the world (he blows it), and a battle royal starring our hero Chester, some blue lobsters from outer space, a heroic midget, more bad small jokes than you can shake a stick at and, most important, a pill that makes your fantasies real.



Mr. Anderson looked at the future through the strange eyes that the psychedelic '60s (this book first appeared in '67) gave a lot of folks and came up with a fabulously twisted-looking world. So if you're even a little nostalgic for the futuristic fantasies of yesteryear, take a look. And if you're too young to remember when you didn't use your car to take trips, then see what you missed and perhaps you'll prefer Anderson's slightly stronger possibilities.

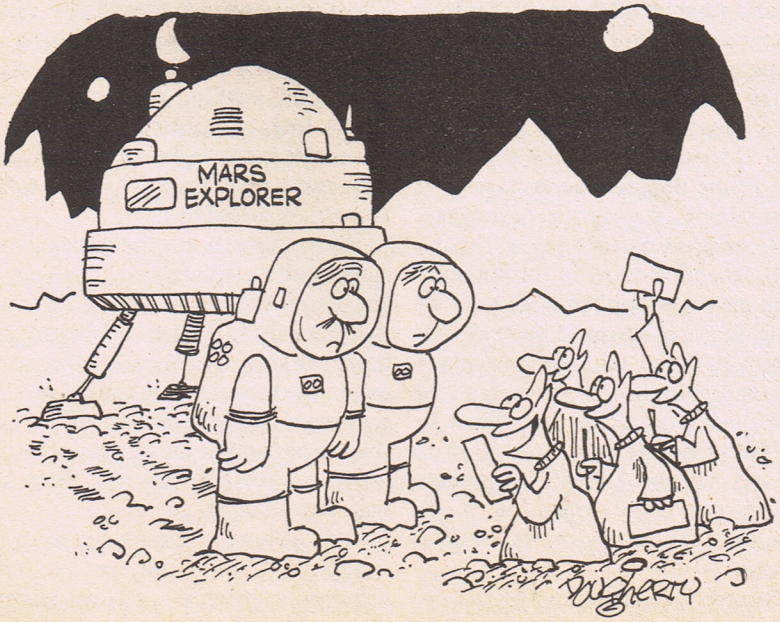
Shuttle Thriller

Some of the other genres are encroaching on SF's space. A mystery-thriller writer has created a very creditable, terrorists-in-space number for our edification. The gentleman is Mark Washburn and the book is **The Omega Threat** ($2.25 in paperback from Dell).

The Omega Threat stars a very appealing high-tech antihero—one Sam Boggs, a former revolutionary who blew up buildings but never people. Boggs has retired to the traditional desert island retreat but now the CIA wants to put him back into action.

It seems that the spooks think that some of Boggs' old comrades are involved with the bomb that's on the space shuttle *Discovery* up in orbit. That makes Boggs want to stay retired. But when those old friends start dying exceedingly messy deaths he comes back with a vengeance. In fact, he gets so enthusiastic that they stick him in a space suit and send him upstairs to disarm this threat.

Washburn has done his homework. The earthbound sequences move well and keep you turning the pages, and the space sequences are accurate and well-considered. Maybe the fact that Washburn's a science writer in real life has something to do with that. Well, whatever the reason, what we have here is a well turned out space adventure complete with a few thrills that even manages to convey some of the sense of wonder of playing in space that the astronauts have tried so hard to convey.



"...And which one of you is Mr. Bradbury?"

Is It Worth It?

(continued from page 45)

tals, with their steadying millenia of culture, tend to be more phlegmatic. We can probably learn a great deal by being less hasty, and by critically scrutinizing *them*. The Russians, the Europeans, the Chinese, the Japanese, and even third-world countries are tooling up for space—the field we pioneered and from which we are now retreating. Why? What precisely are they doing? What do they believe they have to gain? Perhaps by watching them more closely we can get a clearer perspective on what we ourselves have to gain by entering—or lose by foregoing—the new era in space.

Second, as Jon Michael Smith, NASA's Chief of Pricing, Launch Agreements and Customer Service Engineering for the shuttle, points out, you can't design the bridge by counting the swimmers; it's the automobile traffic that will count. The demand for opportunities in space is as yet unclear, just as was the demand for going to California before the gold rush. But although the gold was what attracted the settlers to California, it was the land that made them stay. What gold and land lie out in space? What striking opportunities for entrepreneurs? We don't yet know; but *absence of certainty is not certainty of absence*. Thomas Jefferson was wise enough to know that when he risked his Presidency for the Louisiana Purchase. And we do know that there are at least 8,000 people who hanker to work in space—the hardy men and women who applied to be shuttle astronauts. There are at least 8,000 swimmers. What might be the "automobile" demand?

Third, in examining the pros and cons of continuing our investment in space, do not fail to face the fact that these are unique times requiring unique actions. There are many groups urging us to go back to small-scale subsistence farming, urging us to "get poor fast"—to return to the very insecure grubbing state from which our forebears struggled to be freed. We've already bitten the apple of knowledge. The cities already exist; the technology is known; there are a hundred-fold more people on this Earth than there were a century ago; we've touched the Moon. The simple fact is, we can't return to the past. Times have changed. Yes, the physical resources on this Earth are limited—but there is no evidence that our intellectual resources are. Moreover, as Hugh Downs of the National Space Institute has pointed out, the surface of the Earth lies open to space. And the resources of space are infinite.

Fourth, in contemplating any course for the future, our biggest enemies are not human ills, but are pessimism, apathy and fear: pessimism (indicated by X-rated movies and bestsellers) that our real nature is lodged in our fists and genitals, apathy that world situations are too bad and governments too massive to change, and fear of taking any financial or political risk. Pessimistic and apathetic feelings about the future are only self-fulfilling; by giving up in advance and doing nothing, nothing is done. Even worse, the apprehension and insistence on eliminating the error *before* the trial is nothing less than middle-aged timidity—the kind of timidity displayed by a 45-year-old man at the height of his powers and dissatisfied with his job of 20 years, but afraid of daring to change for fear of having too much to lose.

The young do not feel that way. Today there are hundreds of thousands of voting adults who have no concept of what the world was like before rockets split the atmosphere. Those under the age of about 25 have grown up in a completely different sociological environment from their older contemporaries. These young people broke box-office records at *Star Wars, Close Encounters of the Third Kind, Star Trek* and *The Empire Strikes Back* because those movies combine adventure and vision with characters who were strong people in dilemmas, who grasped the power of hope and changed things. To these young people, space is not merely an option, but their birth right. Says Gilbert V. Levin, designer of the labeled release experiment aboard the Viking landers, "The people are voting every time they go to the box office."

According to former astronaut Senator Harrison M. Schmitt, that spirit infects young people wherever he goes—particularly American teenagers. When he addresses youth groups, he frequently asks how many in the audience want to go the Moon; they all look interested, but only about 75 percent raise their hands. Then he asks how many want to go to Mars—and virtually all the rest of the hands shoot up. When he asks, "Why would you want to go to Mars and not the Moon?" the astronauts of tomorrow reply, as if it's self-evident, "You've already been to the Moon."

He's already been to the Moon. So they want Mars.

Technology has changed, but human beings have not. Every new generation is impatient to pioneer its own frontiers. Courage is natural to it. And courage is a precious resource. If today the U.S. government were to follow *its own historical precedent*, it would not be eroding Kennedy's commitment to the "long-range exploration of space"—it would be *giving away* the equivalent of land grants in space to settlers and entrepreneurs. Because the sturdy spirit that is our heritage is also our only hope. James Michener phrased it most eloquently: "We risk great peril if we kill off the spirit of adventure. . . The sense of exploration is intimately bound up with human resolve, and for a nation to believe that it is still committed to forward motion is to insure its continuance."

If we can land a man on the Moon, why can't we solve our problems here on Earth?

Space is a *resource*, as precious as air, water and earth. Proper *use* of the space resource has already—and can continue—to help ameliorate ills here on Earth, financially, materially, and to an extent even socially. But life is a dynamic, evolving, changing system. Short of freezing time itself at one moment, no technological accomplishment—and perhaps no accomplishment of any kind—can "solve" those ills for once and for all. The teeming human condition will probably never be free of troubles—more likely than not there will always be marital difficulties, natural disasters, birth defects, disease, death by old age, crop failures, national antagonisms, and even war.

The existence of those perennial troubles, however, should *not* dismiss space travel as simply a flamboyant romantic fantasy which offers escape from glum reality. Yes, space travel is partly that—but more importantly, it raises our eyes to what glory human beings *can* attain when they work toward something grand together.

We must *not* bottle the restless human spirit under a lid with no safety valve—for then it will *surely* explode. We must *not* allow middle-aged timidity to determine the future of the vigorous young. We must recognize that the risk of doing nothing may be the gravest risk of all: to the list of human ills on this planet, we must *not* deliberately add frustration and hopelessness.

Only as long as energy and spirit exist—and only as long as there is a safety valve in a frontier—will we have the chance of pulling through.

earth control

By BOB WOODS

Is The Whooping Crane Saved?

The whooping crane is a survivor. In the face of adversity—no less than extinction in this case—the native American whooper is today... doing much better. This is particularly noteworthy since the survival of this stately bird is a combination of both human and aviary efforts. It proves that humans are capable of turning around a disastrous environmental situation.

The whooping crane (*Grus americana*), characterized by spindly yet strong legs, snowy white torso, elegantly long and curvaceous neck, and majestic black mask crested with a shocking red tuft, is unusual right from the start. In 1920, there were no more than an estimated 20 whoopers in existence. There were never that many of them anyway; experts estimate that their population peaked at 1,300 to 1,500 individuals.

There are currently 119 whoopers, including captive-bred and wild populations. (The wild whoopers migrate from the Wood Buffalo National Park in northern Canada and the Aransas National Wildlife Refuge in Texas; a foster-bred flock migrates between Grays Lake National Wildlife Refuge in Idaho and the Rio Grande Valley in New Mexico; and captive birds are at the Patuxent Wildlife Research Center in Maryland, the International Crane Foundation in Baraboo, Wisconsin, and the San Antonio Zoo.) The whooper's commendable recovery is due partly to the bird's hereditary, instinctual survival tactics, though human assistance has had a major effect. And rightly so; whooping cranes and humans were not destined to live together. The whooper has tolerated our presence, but has always kept a deliberately safe distance. However, the distances kept getting shorter and shorter.

By the end of the 19th century, the whooping crane population began a dramatic decline... mostly at the hands of *Homo sapiens*. Overzealous hunters—you know the type; they wiped out several million American bison and triple that amount of passenger pigeons—did a number on the whooper. In the 50 years prior to 1920, sportsmen downed more than 250 of the birds. Agricultural development of the Great Plains was another factor, as was a severe hurricane that took most of the Louisiana whooper population with it. By the

mid-'40s, there remained only a single flock: the Wood Buffalo-Aransas group.

Other human harrassment plagued the whoopers. The Army Corps of Engineers planned to dredge a portion of the whoopers' salt-flats habitat; Air Force training missions dropped bombs near their nests. In 1959, the remote Wood Buffalo nesting refuge nearly became a part of the Canadian National Railway. (Only after rigorous protest from environmentalists was the site abandoned and another chosen.)

The whooping crane is typically monogamous; like many migratory birds, they don't reach sexual maturity until four to six years of age. Plus, whoopers do not venture far from their traditional breeding grounds, wintering areas and migratory routes. With so many factors working against its survival in the modern world, it looked as if the whooper had about had it. Enter the human element.

Environmentalists, biologists and government agencies banded together to protect the whooping crane's habitat, even to the point of monitoring its 3,000-mile migratory path. But this was not enough. One way or another, whooping cranes had to increase their numbers. Some experts voted to allow wild flocks to increase on their own, while others argued for a program of breeding in captivity. The latter group prevailed.

1975 was a critical year in the survival of the whooping crane. The bird was already on the endangered species list. In '75, the U.S. Fish and Wildlife Service established a Whooping Crane Recovery Team, a group of experts enlisted to orchestrate the save-the-crane movement. A unique captive-breeding program was implemented at a research center in Patuxent, Md. Knowing that whoopers lay two eggs, scientists discovered that one egg could be taken from the nest without it being missed and be hatched in captivity. Once the captive flock began to stabilize, eggs from Patuxent were put into the wild, though not with whooper parents. In a bold experiment, the recovery team placed the eggs with foster parents, sandhill cranes. The sandhills hatch and raise the whoopers, who, it is hoped, will eventually mate, breed and establish a second stable wild flock, independent of their foster parents.

Another landmark was set in 1975. For the first time, the Fish and Wildlife Service sought to legally designate the "critical habitat" of a migratory species—the whooping crane—including all the stops along the birds' migration path. However, this also ignited a long legal battle that ended almost four years later. In its proposal for critical habitat, the service omitted an area stretching from the Platte River in Nebraska north to the Canadian border. Environmentalists claimed that the ommission was politically motivated, prompted by plans for a series of pork barrel water projects in the Northern Plains. (Under the 1973 Endangered Species Act federal monies cannot be spent on projects that interfere with protected animals.) A courtroom conflict ensued, centering on the Grayrocks Dam project. Eventually, the case came before the Endangered Species Exemption Committee, a body empowered to forego the protection of the act if the project in question overshadows the existence of the animal.

In the true spirit of the Endangered Species Act—that compromises can be made—the Grayrocks Dam was exempted, but only providing that certain precautions were strictly adhered to by the builders. In essence, the decision allows the whoopers an undisturbed nesting area while residents get their needed electricity from the dam.

But this is a story of survival and the mission is not yet complete. The recovery team's goal is to establish a second (and eventually a third) wild flock from members of the foster-reared juveniles. In the meantime, researchers continue to study the whooping crane; there are still many mysteries to unravel. All the while, a public-education program will be in affect, since an informed public can only benefit the fledgling efforts to save this magnificent bird.

• PORTFOLIO •

RON COBB

By ED NAHA

"I don't think of what I do as apart from what I am," says artist Ron Cobb. "Through art, I can take a subject that I'm obsessed with, work it out and then re-perceive it. My work is the leavings of my life."

The key to Ron Cobb's success lies in the fact that his life has been as eclectic as his work. Famous in both science fiction illustration and newspaper cartooning circles, Cobb is as at home in the political arena as he is in deep space. He has contributed stunning design techniques and illustrations to such films as *Star Wars, Alien* and *Dark Star* and has influenced a generation of young political activists via his California-based underground cartooning. Although a cult favorite in America, Cobb has never received the publicity in SF-fantasy circles awarded many of his peers. This condition, happily enough, is due to change momentarily when Cobb steps into the spotlight with a collection of his best work entitled *Colorvision*; a many-hued tome published in Australia by Wild & Woolley and distributed in the U.S. by Seagate Books.

Currently hard at work designing the sets and costumes for John Milius' forthcoming widescreen *Conan* film, Ron Cobb is obviously having the time of his life; still concentrating on illustration but working full time in motion pictures as well. "I never had film as a set goal in my life," he says, "but it seemed inevitable that it would become the most ideal outlet for me. It's been automatically appealing because it's a combination of both art and science and I've always been interested in both."

The multi-faceted love affair between Ron Cobb and the art realm dates back to the early 1950s, although the artist would not attain any semblance of fame until a decade later. "Most people first saw my stuff during the 1960s when I was doing my editorial work," he smiles, "but I'm one of those people who has drawn all his life. It was a way of both distracting myself and entertaining myself. For some odd reason, art was always important to me. I always worked hard on developing it."

Born in Los Angeles and raised in Burbank, California, Ron's artistic leanings took on dire overtones during his teenaged years. "By the time I was in high school," he muses, "it was dangerously close to being an obsession with me because I never really responded well to any other sort of education. I just drew a lot. I never went to college or anything. After high school, I went straight to work at Disney Studios. I worked there from 1955 until 1957 as an 'in-betweener' on *Sleeping Beauty*. It wasn't terribly creative. You wind up doing every fifth or tenth drawing. And it takes forever to advance at Disney. Most people put in their two years, learn animation and then split for a smaller studio where they become animators. If you want to become an animator at the Disney Studios you have to work there for 30 years and then wait for someone to die. There's not much of a future at Disney, but it's a great place to start."

Showing traits of an unpredictable streak that would one day become a way of life, Ron left Disney and abruptly decided to deep-six the world of animation. "I realized that I was more intrigued with the spontaneity of live action and that, if I ever did get involved in film, it would be in that area. Animation was just too laborious for me. The spontaneity is lost too quickly. Animation is so over-planned that you lose track of the flow you're trying to accomplish."

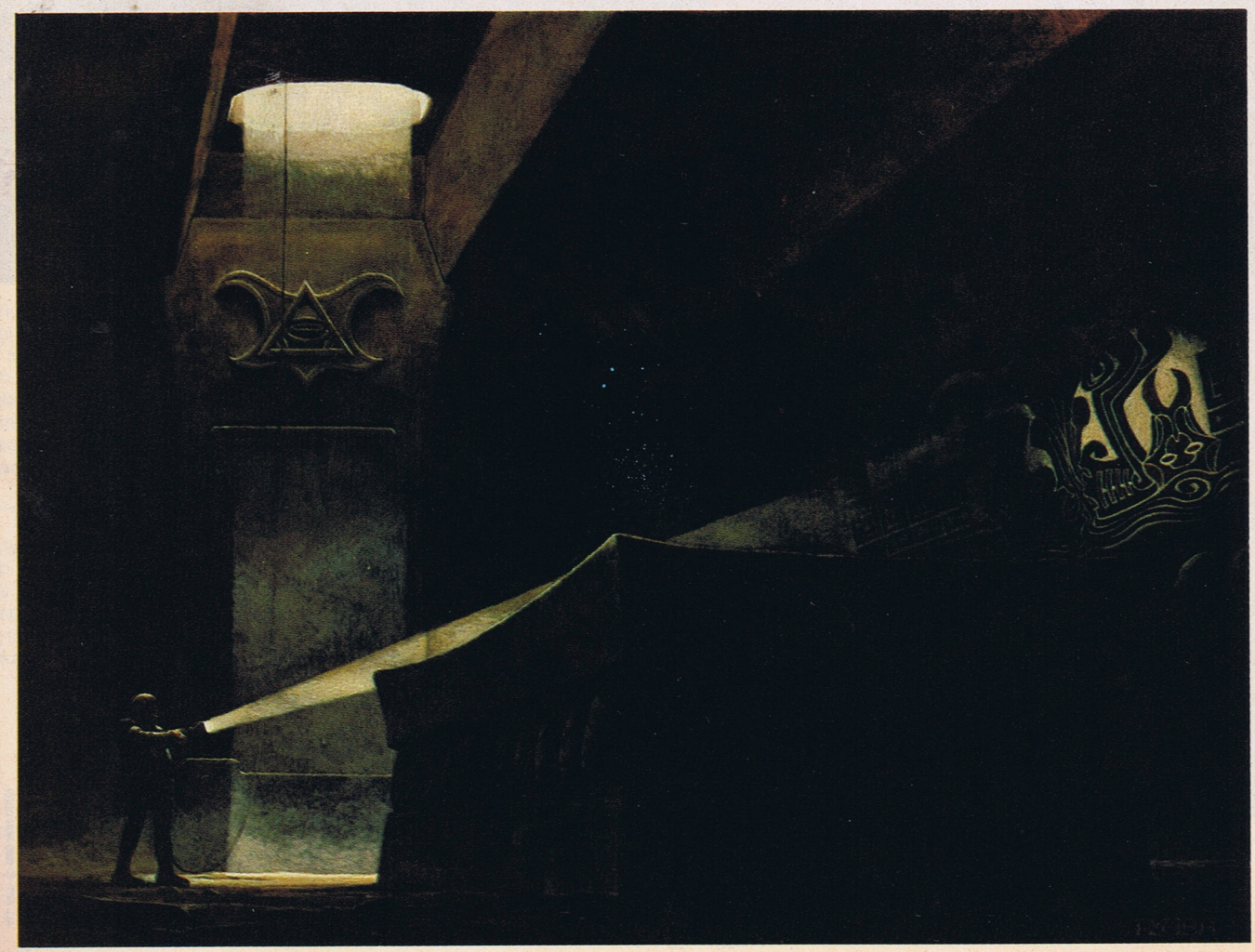
Leaving Disney, Cobb began dabbling in straight artwork "as a form of survival. It was all I could do. I had no other skills." Work was slow in coming. Undaunted, Cobb held down a number of odd jobs while attempting to refine his craft. Then, an unexpected turning point in his life...he was drafted. "I went in the Army during a very odd time," he states. "It was before Viet Nam and before the Cuban Missile Crisis. I was insecure, undereducated and bored in Burbank. When the draft came along, I was running around with these extraordinary people who shared an enormous hatred for the military point of view and conventional politics. We were '50s radicals, dangerously close to being existential fatalists. We weren't quite that far gone, though. We still had a sense of humor.

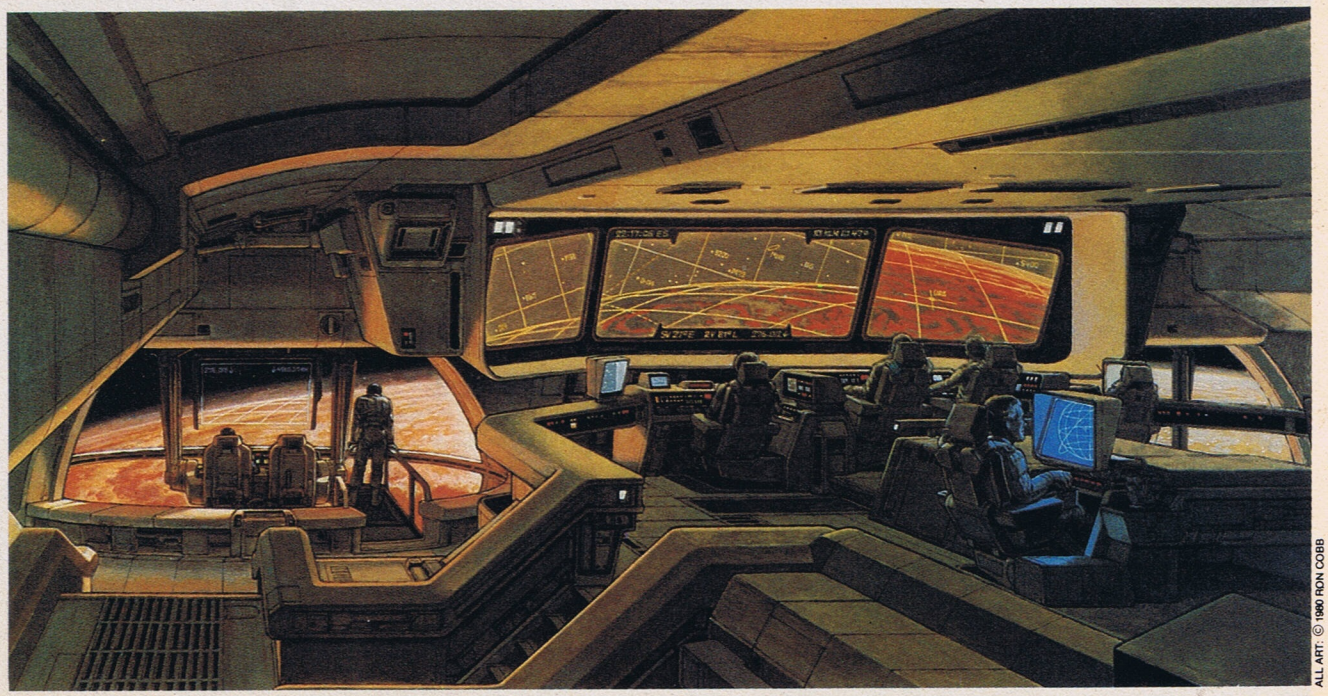
"I shocked all my friends by allowing myself to be drafted when I could have avoided it. But I felt that I needed that confrontation. The Army was the real monster in my philosophies. The overall experience did provide me with a very good confrontation period. It cleansed me of my fear of authority and strengthened my opinions as to what was wrong with the establishment, if you will, and certainly the military. I also was surprised to find that there were some things that I *liked* about the military. Some things that seemed to make sense. When I came out, I had no ill feelings towards the Army. I was just aware of how foolish the war in Viet Nam was and how confused and frightened everyone was. I wanted to comment on that. Eventually, it would surface in my artwork."

Following his stint in the army, Cobb dove headfirst into what would eventually come to be known as the American counterculture. "I moved into this funny old house in Hollywood knowing that I was going to stick with art even though I was inexperienced and undisciplined. I had no art school training and I had never really worked in a sustained way. I was very ignorant of a lot of techniques. I survived, though. The 1960s were coming and drugs were coming and music was coming and underground newspapers were coming. I did a few album covers and all sorts of strange jobs. I wasn't quite sure of what I wanted to do or where all this would lead me. Then, suddenly, I found myself the editorial cartoonist of the *Los Angeles Free Press*. Up until that point, cartooning was a casual interest of mine. The only memory of cartooning I had was from reading the old E.C. comics when I was a kid. I loved that short-cut form of illustration."

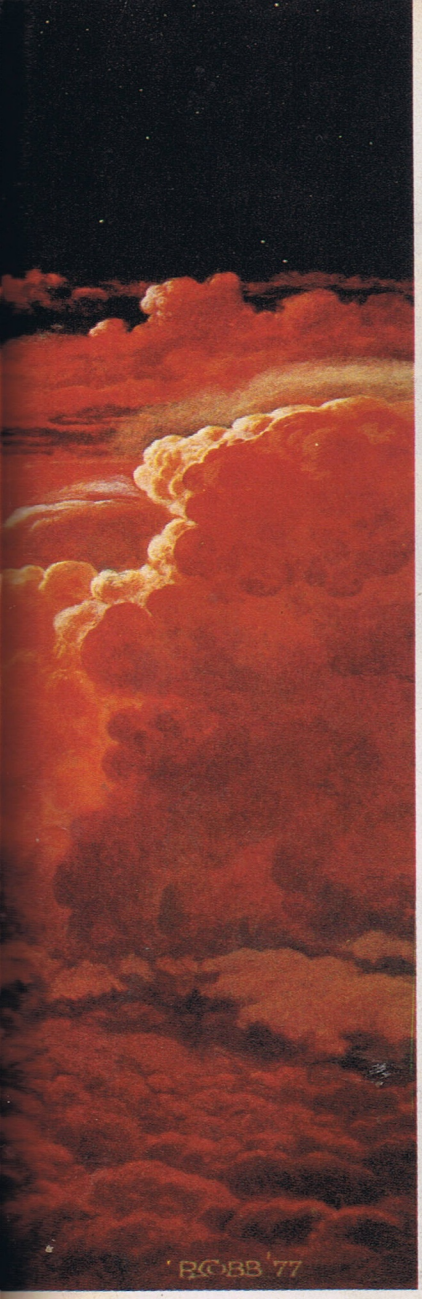
During the 1960s, strange twists of fate seemed to shape Cobb's career quite often. Witness his introduction to the world of the radical *Free Press:* "I was a largely unsuccessful magazine cartoonist," he laughs. "I happened to have had one cartoon on me that *Playboy* had rejected when I was visiting the *Free Press* with a friend of mine. He went there to

Opposite page: Cobb's original concept art for *ALIEN*. At top is the alien ship. Initially, the craft was to be destroyed. Below is the interior of an alien tomb where the human astronauts encounter the fateful eggs.



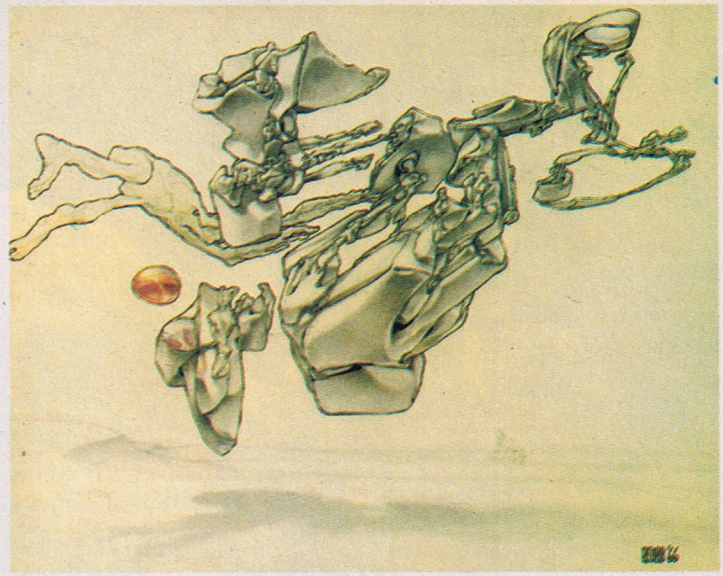


ALL ART: © 1980 RON COBB

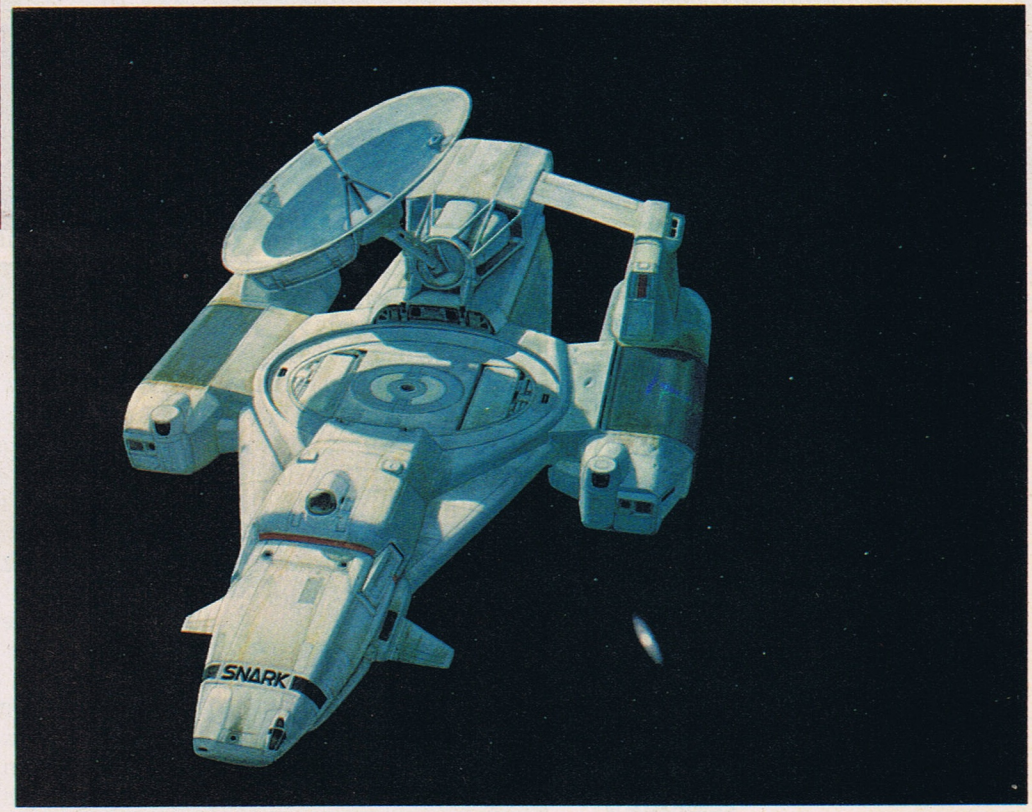


Early version of Dan O'Bannon's concept for *ALIEN*'s "little planetoid." "I never liked the idea of a planetoid with an atmosphere. I wanted it to be a planet . . . part of a double-star system. You can see a white dwarf [planet] and a red giant in the background."

Early design of *ALIEN*'s bridge. The ship was first named *The Leviathan;* it was later changed to *Nostromo.* Cobb's idea was criticized for being too luxurious, a concept the artist balked at.



According to Cobb: "This is just a weird painting. I don't know what it is. It's a drawing I made one day . . . a doodle I call 'Air Forms,' because I had to call it *something.*"



The old *Snark,* the original design for the ship that eventually became known as the *Nostromo* in *ALIEN.* With Ridley Scott's help, it also became a lot larger than originally conceived. O'Bannon wanted it to remain a smaller ship.

Above: A very early preproduction piece for *Star Wars*. The scaly beast shown here went through a series of transformations and eventually appeared on the screen as the mastodon-like bantha.

Right: One of Cobb's sketches for the *Star Wars* cantina scene. Says the artist: "It never made it into the finished film. This is the first time it's been seen."

pick up a letter. An editor pointed to this parcel under my arm. 'What do you have there?' 'It's a cartoon.' 'Gee, could we print it?' I said, 'You certainly may.' So they printed it for free. I was just delighted to see it in print and I said, 'Gee, if you don't mind, I'll do another one for you next week.' They said, 'No, we don't mind at all.' I started doing cartoons for them in 1965 and continued for five years. But even during the height of the 1960s, when I worked for the *Free Press* and had my cartoons syndicated all over the country, I never made a living at it. The most I made during syndication was $45 a week."

While penning cartoons on "contemporary, simplistic themes with complex overtones," Cobb began dabbling in the fantasy genre on the side. "I started to do monster magazine covers to supplement my income," he reveals. "I did a few of the Warren books; *Famous Monsters of Filmland* and so forth. They kept me alive. Then I started painting and selling privately. Most of my work was fantasy oriented. I've never been so much a subjective artist as a person interested in art. So I became interested in trying everything. I did abstract expressionism. I did overt fantasy illustration. Everything. I was fascinated by the simulation of art."

Cobb made inroads into the realm of SF-fantasy filmmaking during the early 1970s, designing the exterior of the spaceship used in the Dan O'Bannon-John Carpenter film *Dark Star*. O'Bannon became a staunch Ron Cobb booster. A few years later, through O'Bannon's help, Cobb went on to achieve instant recognition in the science fiction film community via the legendary George Lucas production, *Star Wars*. "O'Bannon was working on *Star Wars,*" says Cobb, "and he convinced George Lucas that I'd be the ideal man to do some additional aliens for the cantina sequence because George wasn't entirely pleased with the footage he had when he returned from the London set. He wanted to do some cutaways to show a few more elaborate creatures. I submitted about six little color paintings and about three of them made it into the finished film. The big hammerhead alien was the most notable. That amounted to about two weeks work."

Ron's next bout with cinema was somewhat less inspiring. "I was about to work on the legendary *Dune* movie with Dan O'Bannon when that project collapsed. I had done a few sketches that were never sent to *Dune* headquarters in Paris. Dan, once again, had recommended me to the director, Alejandro (*El Topo*) Jodorowsky. He was going to use me as well as Chris Foss and Geiger to do designs for the film. By the time I was ready to board the plane to Paris, the production was all over. I never even met Jodorowsky."

Friend O'Bannon once again proved a cinematic inspiration to Cobb, dragging the artist into the fray of an embryonic brainstorm which would eventually hatch into *Alien*. "That was a long term project," Ron says. "I worked on that forever. When Dan returned from *Dune,* he collaborated with Ron Shusett and came up with the plot for *Alien*. I was in it right from the beginning in that I did paintings for them to take around to movie companies with their treatment when they were trying to sell the project. Eventually, they sold the film and, although the plotline was modified quite a bit, I became an illustrator for the film. They called me a 'concept artist.' I quite enjoyed that film because I had to design machinery that was imaginary yet seemed totally plausible and functional."

Currently at work on the swashbuckling epic *Conan,* Cobb freely admits that, in the future, he would love to work exclusively on science fiction/futuristic movie projects. "*Conan* isn't exactly up my alley," he laughs. "What I enjoy most is working on sets that pose real problems. *Conan,* for instance, doesn't pose as many problems as the sets for *Alien* did. I prefer those problems. That's why, from now on, I'd love to work on very sophisticated, technical films. I very much enjoy designing bogus hardware for amazing machines. I have an affinity for that."

All of Cobb's work, from his editorial cartoons to his futuristic renderings, seem to deal with some problem of one sort or another, sociological or technological. "There are complexities in life," Cobb says, "that I try to mirror in all of my work. All of my art thus far has been an illustration of my journey through life. As I accept a challenge to do something, my work reflects it. In a way, I think that's the way it should be. That's the reason I enjoy seeing the work of other people, whether it's considered technically competent or not. It's interesting to get an insight into other people's personalities and experiences. It's a form of communication. It's visual and visceral. It's invaluable."

Ron Cobb pauses for a moment and reflects upon his career. Sitting in Spain, surrounded by pseudo-barbarian sets and costumes, he sums up the variety of work, spacey and otherwise, that appears in *Colorvision*. "All I'm trying to do," he states, "is communicate."

Ellison

(continued from page 33)

escapees from the chipmunk factory.)

As an artist who (in the words of Dame Margot Fonteyn) doesn't take himself very seriously but takes the *work* very very seriously, I spend most of my waking hours writing stories and books and movies that I hope will have some lasting import, work that I slave over and put most of my daily energy into. Posterity stuff, know what I mean? The real goods. The forms I use and the styles I adopt are changing; approach is malleable, it mutates. I seek to produce a variety of textures and velocities, densities and rhythms of movement. I wish to sink no roots but rather to displace air, to create a sense of something abundant and prodigious having passed.

Imagine my consternation when I go out in the world—dressed even as you, I pass among my people, unseen and unheard yet I see and hear and remember—five bucks to the first reader who spots the cinematic source of that line—and meet my readers.

Jeezus, it is to chill the blood.

The word *weird* ennobles some of you.

Look: I realize a lot of you have problems...it has not escaped my notice that many of you have French Fried your brains sitting in front of the Sony...life is tough, I got that, honest to God I *got* that...the specter of Reagan and fighting for Dat Ole Debbil Crude in Iran or Kuwait or South Philly rises up in the night to make us whoopee our Hydroxes...few of us will come through the sexual revolution unscarred, if not emotionally than certainly with herpes simplex...your father is going through menopause, your mother did a weekend seminar in est and she's driving you buggy with psychobabble, your sister wants to be a Clayton chassis dynamometer technician and your brother hangs around the meat rack... the new Heinlein ain't terrific and the new Bester is an old short story pumped full of air and when the hell is Poul Anderson going to get back on track and is Spinrad becoming a crypto-reactionary and how much more of this obscure twaddle by Ellison can we stomach...I know it's tough, folks, and we have about as much chance of securing our sanity as a snail in a bucket of salt...but WHY ARE YOU SO GODDAM WEIRD!?!

Honest to Skippy, I'm not saying this to rile you. Believe me, in my squishy little heart of hearts I have nothing but respect and admiration and unquenchable love for every last screwloosed one of you. Even the one who calls from New York three times a day and then hangs up without saying anything. Even the one who sends me drawings in magic marker that I couldn't tell top from bottom if she didn't sign them with a signature that dwarfs the art. Even the one who writes me long poems in Esperanto, which I don't understand, without return postage. Even the one who teaches college in Pennsylvania and spends his off-hours making up the most incredible lies about my private life, based on old vaudeville routines. Even the one who named her firstborn after me. Even the one who found out I've been looking for a Dell Book (not a Big Little Book, a similar species published by Dell in the 40's) titled *Flash Gordon and The Emperor of Mongo* for about ten years and can't get my hands on one, who sends me hand-drawn pictures of Flash performing hideous obscenities on Dale Arden. Even the one who sends me religious tracts that assure me I'm going to Hell. Even the one who wants to buy my used Jockey shorts. Even the one who shows up at every autograph party in the Southern California area to ask me why I hate Barbra Streisand's voice. Even the one who swears I knocked her up last year even though I had the vasectomy *five* years ago. Even the one with the bird calls; the one with the right blue eye and the left green eye; the one who wants to pay me to let her read tarot cards over me; the one with a voice that could stun a police dog; the one who asks me why I don't stop the draft registration...the one...the one...the one who...I stagger, I falter, I fall in the traces...

May Yog-Sothoth hit me with a bolt of lightning in the pancreas if I'm not strictly wild about the whole slobbering warbling pack of you.

I love you all. May Yog-Sothoth hit me with a bolt of lightning in the pancreas if I'm not strictly wild about the whole slobbering, warbling pack of you.

Nonetheless, it *is* a bit disconcerting to get out there and meet all of you. And when some of you come to visit, unannounced and imprudently, sure I have the doorknobs cauterized. But does that dismay me. Not on your autographed Luke Skywalker hologram. Steadfast, thass me.

But just to make it a little easier for those of us you seem to consider great gurus, here are some tips of etiquette. How to talk to a writer. Things not to say. (I glean these tips after consultation with others of my genus who have begun to twitch prematurely: Frank Herbert, Poul Anderson, Larry Niven, Bob Heinlein, Mary Wollstonecraft Shelley, Ambrose Bierce, George R.R. Martin, Ursula K. Le Guin, Bob Silverberg and Stephen Donaldson. Jack Vance still refuses to speak to me because I voted against Goldwater.)

First Tip: never say to a writer, "You know, I've looked in every bookstore in the state of Washington, and I can't find one single copy of any title you've written. Do you know they're not distributing your stuff, huh, did you know that?"

Yes, you insensitive lump of yak dung, I know it. And so does every *other* writer. We are as closely aware of where and how our books sell as you are of how much cash you have in your funny little change-purse. It is a constant anguish with which we suffer. There are something like 500-700 new paperback titles issued every month. Take your average paperback "spinner" rack in, say, a 7-Eleven. It has, what, forty, fifty pockets? Say fifty pockets. That means only fifty titles get full cover display. Anything behind that facing book is a lost book. And so if a writer is lucky s/he will get full-face display in one of those pockets above knee-level where the few remaining members of the reading public can see it...for about seven days. Then comes the new batch of titles, the writer's book is pushed to the back, and ten days later it's gone off the rack entirely.

Which means that unless one has written something of classic stature such as *The Secaucus New Jersey Fat Doctors' Diet* or *Jackie O's Secret Sex Life*, or a smash bestseller such as the latest plastic offering from Judith Krantz, Sidney Sheldon, Harold Robbins, Rod McKuen, Richard Brautigan or one of those pseudonymous lady writers with three names who prate endlessly of throbbing bosoms and bold highwaymen, you are in the toilet within two weeks. Even a brick as thick as the fan who tells a writer his/her books can't be found, should know that this means distribution kills *all* of us, no matter how

well-known or unknown, no matter how talented or inept, no matter how beautifully-packaged or uglified. And we spend several hours each week on the phone to our publishers, demanding information or explanation—why ain't the books out there?

So don't do that to us. If you want to indicate your love for what we write, then lie to us: tell us you were in the B. Dalton or the Waldenbooks flagship store and they had three huge stacks of our current title, right there beside the cash register at point-of-sale, and people were kicking shins to get at the copies before stock ran out.

On the other hand, if you *want* to annoy us, go ahead and tell us we can't be found anywhere. However, having been warned, and knowing that you're doing it to bug us, the shins likely to be kicked are thine own.

Second Tip: don't intrude your personal needs or problems into the lives of writers whose work you admire. That means, when you write a letter, don't babble on for three pages about how you simply *adore* every word we've written and how you're our *biggest* fan (my biggest fan weighs four hundred plus pounds; the only thing that beats him is the Goodyear Blimp); don't waste your time and ours telling us how we've changed your life; don't preamble a simple request with a tearjerking story of how you can't get an A in your CompLit course if we don't answer the 77 essay questions you've posed in the accompanying questionnaire; don't ask us to read your stories, novels, screenplays, poems, essays, reviews, interviews or idle ruminations for comment; don't send us baked goods by fourth class, they're always maggot-ridden by the time the Snail Mail gets the crap to us; don't ask us to help you get into publishing, writing, the movies or the plumbing industry; and for God's sake don't ask us to reply even though you *know* we're up to our *tushes* in work but any kind of a hello how are you will suffice (if we answered all the dumb mail we get, we'd never be able to write the stories you liked in the first place that made us worthy of your notice).

In short, keep it short and simple, and try to do for yourself all the things you want us to do. Self-reliance will give you regular bowel movements. Most of us have neither the time nor the facilities nor the inclination to save your lives, remove you from the clutches of your rotten parents who do not understand why you spend all your time making models of Darth Vader and Close Encounter motherships, give you summer jobs working in our offices, forwarding your illiterate manuscripts to agents or publishers who would think we were nuts if we bothered them with amateur efforts, meeting you for a cup of coffee or a quick roll in the hay, or signing autographed photos which *we're* supposed to provide. And for God's sake stop asking us where you can buy our books. That's why the Sentient Universe created bookstores, newsstands and a reference work called *Books in Print.*

Third Tip: brush your teeth.

Oh, come on, now, don't get all guppy-faced on me. None of the other writers will tell you this; they're too polite. Most sf writers are destitute, and they don't want to offend their readers. With me it's a different matter; I'm loaded, so I can tell you the truth.

And the truth is that some of you who come up to us at conventions, lectures; lunchrooms where we're trying to eat a nice chopped liver on corn rye w/Dr. Brown's Cream Soda, autograph parties, etcetera . . . well, some of you smell like the butcher's mallet after a hard day bashing in horses' brains.

I realize it's bourgeois to suggest that maybe there are a few body odors, such

as those produced by dropped-dead bacteria or as a result of eating human flesh, that might be less than salutary. I appreciate your need to remain "natural" by avoiding underarm deoderant, Bounce in your wash, aftershave lotion, Dr. Scholl's foot fungus powder, Wet Ones for your baby bottom and suchlike . . . natural is naturally best . . . particularly if you're eating Pringles, McDonald Toadburgers, Diet Pepsi and chemically-augmented yogurt. Nonetheless, I would be less than candid were I not to confess that when some of you lurch up and stick your gaping pudding-troughs at us, all rotted fangs and green ichor, it fwankwy makes me wanna womit.

Fourth tip: stop reading our personal lives into our stories. Hate to shock your nervous system, but the Artist is not the Art. Just because Ted Sturgeon once wrote a story about homosexual aliens does not mean he is necessarily gay or alien. Just because Bob Bloch—one of the gentlest men who ever lived—wrote *Psycho* is no touchstone to a perception that he is secretly a deranged mass-murderer. Just because I write stories filled with senseless violence, incredible brutality, endless debasement of human beings and twisted, diseased, horrific concepts of sexual atrocities does not mean I gave to the March of Dimes last Christmas. On the other hand, it might.

The point is, kiddo chums, we are *interpreters* of reality; not recorders of same. Journalists do that. We simply take bits and pieces from here and there and reorder them. That means we deal with the basic materials of the human condition, and that which looks interesting to us gets into the stories. Writers are also, as Mario Vargas LLosa has said, exorcists of their own demons. So *some of us* is in there. But it ain't one-for-one. Trust me.

And on that uplifting note, I'll take my leave this time, reassuring you (as I whistle down the walk) that this has been something of a preamble to the column-after-next, which will be my sixth installment. Because, as promised, every sixth column will be responses to as many of the warm, wonderful, intelligent postcards you've sent as I can stomach, er, as I have room for.

Just to keep us in touch. Usually, I wouldn't touch some of you with a leper's claw. But then, I'm seldom invited back to the same house for dinner, so who's to say.

EDITOR'S NOTE: Mr. Ellison has been given a free hand to express his opinions. If you don't like what he says, it's not our fault. If you really love his column, we'll take full responsibility. Publishing is funny like that. The content is copyrighted © 1980 by The Kilimanjaro Corporation.

Devo

(continued from page 27)

been into parody or inside jokes or anything. We've always wanted everybody to understand what we were doing and why we were doing it." Bob adds ruefully, "We always thought we were being right to the point, but apparently it wasn't direct enough."

"We don't want to be obscure," Alan offers. "I think it's hypocrisy to pretend to communicate with people and then purposely be obscure so they can't understand you. I mean, there's no doubt that some people will be magnetized by a band that purposefully sets up some kind of obscurity about where they're coming from. But that usually just hides a lack of content." Mark amplifies the thought: "The cult esthetic of liking only what's obscure is just as sick as being mindlessly led around by the nose. Take the Residents as an example. They are exactly what we don't want to be, and what we once were—an artsy band liked by a few people who consider themselves elite, or with it, or hip, while the vast majority of the people on the planet never hear about them at all. We aren't at all interested in whacking off like that."

With their recently-released third album, *Freedom of Choice* (Warner Brothers BSK 3435), Devo's wish to be accessible is readily apparent. Though they insist they didn't start out with the intention of making a more "commercial" album ("We just don't think that way," Alan asserts), the album is certainly the least idiosyncratic Devo LP to date. The band's sound has been pared to the bone, with the synthesizers playing relatively straightforward melody lines and the vocals relating less oblique statements with a minimum of quirky stylization. The album will probably disappoint fans of Devo's more esoteric side—the cult—while listeners accustomed to mainstream rock songs will find numbers like "Girl U Want," "Whip It," "Gates of Steel," and "Don't You Know" not the least bit alien. Which, if their words are to be believed, is exactly what Devo wants. While radio programmers and club DJs will (hopefully) play a song like "Whip It" because it's catchy and has a good, compelling beat, they will also be spreading the explicit message of optimism and inner strength conveyed by the lyrics. *Freedom of Choice* marks something of a refinement in Devo's two-pronged attack, one not directed exclusively at the head or the feet, but at both simultaneously.

"We want to affect people on a physical level, as well as impressing them with our world view," Alan explains. "We always try to do a show that incorporates the maximum number of ideas while staying within our limited means. We're looking to the time when we have more money, so we can control things better."

Mark's eyes light up at the thought of increased financial support, and what that would mean to the band. "If we had more money—if we were more successful at this—we could afford to go on to bigger and better things, things that we could only think about up until now. We've got lots of ideas, for video presentations, for live performances, that would take things far beyond where anybody else has taken them. We've read the studies of sound, and we know which subsonic tones make people shit. We'd love to make everybody show up at our concerts in diapers, and then have them shit their pants. And we'd hose them all down at the end.

"We want to give people new pleasures. We'd like to explore the sounds that cause extended orgasms. Look at what the government does when they experiment with psycho-acoustics—they use the ones that make people puke, for crowd control. We want to counteract that.

"It's the same story with drugs—they're only being used now to keep the workers in line. Bad chemicals in the food, drugs to keep everyone downed-out so they'll buy more refrigerators. We're waiting for those good new drugs—the ones that make you healthy instead of sick, ones that allow you to live until you're 300, make orgasms last fifteen minutes and reduce the need to sleep so you can accomplish more. But I'm afraid that we'll have to wait a long time for those, because it just isn't in the best interests of big business to have them on the market."

Alan elaborates, "To have people happy or contented takes away from their urge to consume material goods, and if people aren't obsessed with consuming, then the foundations of our society will crumble."

One has to admire the almost missionary zeal invested in Devo's message. Their required energy output—involved in producing their live shows on a grueling tour schedule and constantly generating new ideas—is staggering, and one naturally wonders where it all comes from. Mark says, "We respect our capsules." To which Bob adds, "I guess we're just five tough pistons."

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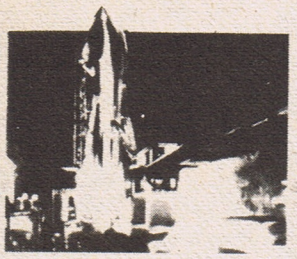
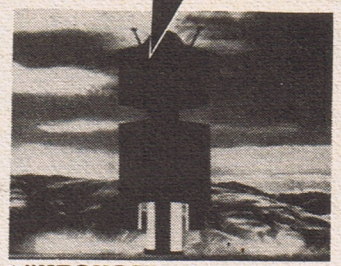


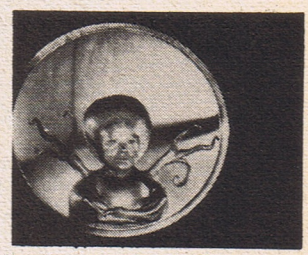
"ROCKETSHIP X-M"

Color tinted—Starring: Lloyd Bridges, Osa Masseh, Hugh O'Brian, Noah Beery Jr., Morris Ankrum. First screen story dealing seriously with man's flight to another planet. A landmark adventure, directed by Kurt Neumann; music score by Ferde Grofe. (Original 1950 version.)



"KRONOS"

B/W—Starring: Jeff Morrow, Barbara Lawrence, John Emery, Morris Ankrum. A flying saucer crashes into the ocean, and a giant robot, capable of draining all Earth's energy, emerges. Atomic bombs are useless as it approaches L.A.



"INVADERS FROM MARS"

Color—Starring: Arthur Franz, Helena Carter, Jimmy Hunt, Morris Ankrum. Young boy is unable to convince townspeople he has seen flying saucer land in backyard. One by one, his parents and others are "taken over" by invading aliens. Classic cult movie directed by William Cameron Menzies.

"TALES OF TOMORROW" Vol. 1 (3 episodes)

B/W—This classic SF anthology series was produced live from 1951 to '53 by George Foley with top-name writers and actors. Includes: "Frankenstein," starring Lon Chaney Jr.—"Read to Me Herr Doktor," a robot tale starring Mercedes McCambridge—"Tomb of King Tarus," a 4,000-year-old mummy, starring Walter Abel. (Includes commercials & trailers.)

"FLIGHT TO MARS"

Color—Starring: Cameron Mitchell, Marguerite Chapman, Arthur Franz. An expedition crashlands on the red planet and discovers an advanced underground civilization. Beautiful special effects, matte work! Produced by Walter Mirisch.

"THE FLYING SAUCER"

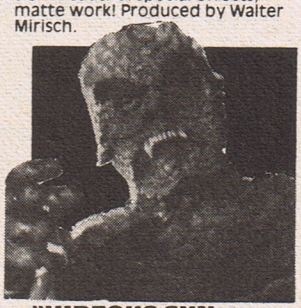
B/W—Starring: Mikel Conrad, Pat Garrison, Hanz Von Teuffen, Virginia Hewett. A huge saucer, hidden under a glacier, is the subject of search by U.S. and Russian scientists. This was the **first** film dealing with flying saucers and was reviewed by FBI before they allowed its release.

"SPACE PATROL" Vol. 1 (3 episodes)

B/W—Starring Ed Kemmer as Buzz Corry & Lynn Osborn as Cadet Happy, with guest stars. Set in the distant future, this sensational adventure series was one of the longest running and most popular of early TV, with the Space Patrol braving weekly dangers ("live" from Los Angeles) to keep interplanetary peace. Included: Early 15-minute episode, prior to Buzz Corry's emergence, plus two 30-minute episodes with commercials, "Mystery of Planet X" and "The Trap on Planet X."

"THE CRAWLING EYE"

B/W—Starring: Forrest Tucker, Janet Monroe, Jennifer Jayne. A chilling SF terror tale of a shimmering alpine fog that contains deadly creatures from another planet. Victims are found decapitated; tremendous tension! Released in England as "The Trollenberg Terror," with music by Stanley Black.

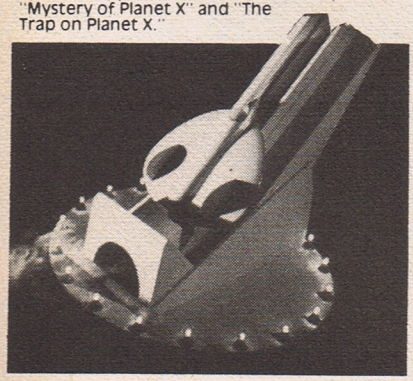


"HIDEOUS SUN DEMON"

B/W—Starring: Robert Clarke and Nan Petersen. A scientist at an atomic lab is accidentally exposed to radiation which turns him into a grotesque killer reptile when sunlight hits him. A real gem of "camp" horror!

"STRANGER FROM VENUS"

B/W—Starring: Patricia Neal, Helmet Dantine, Derek Bond. A benevolent (but frightening) being from space lands to warn Earth and pave the way for arrival of "mother ship." Never released theatrically in U.S., this is essentially "The Day the Earth Stood Still" redressed. Historical! Fascinating!



"TOM CORBETT—SPACE CADET" Vol. 1 (3 episodes)

B/W—Starring Frankie Thomas as Tom, this series became gigantically popular in early 50s, playing on four major TV networks, with a radio version, a comic strip and numerous merchandising tie-ins. Based on Robert Heinlein's book **Space Cadet**, the series had rocket expert Willy Ley as tech advisor. Includes: "Ace of the Space Lanes" & "The Martian Revolt," plus premiere 15-minute episode, "At Space Academy." (Commercials & Trailers)

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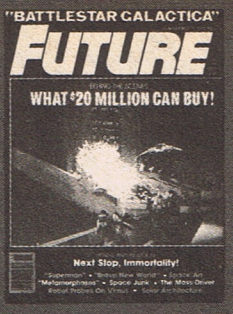

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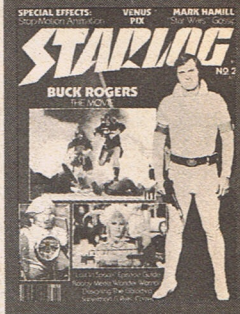

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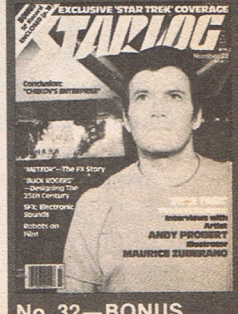

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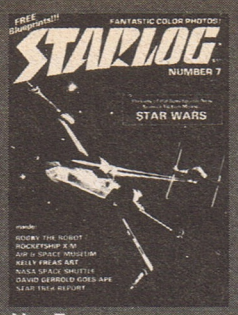

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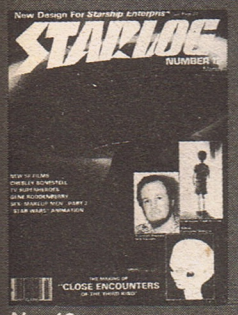

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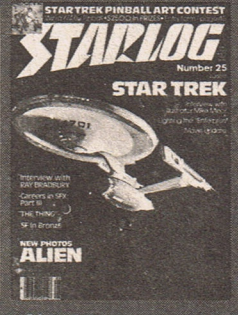

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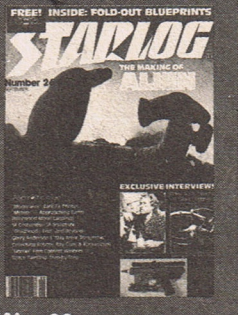

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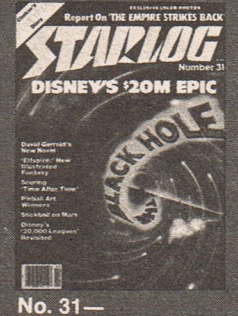

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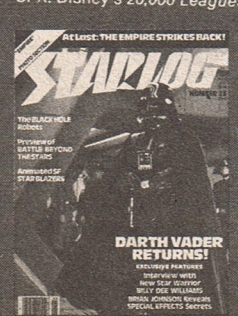

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By JAMES P. HOGAN

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James P. Hogan was born in London in 1941 and educated at the Cardinal Vaughan Grammar School, Kensington. He studied general engineering at the Royal Aircraft Establishment, Farnborough, subsequently specializing in electronics and digital systems.

After spending a few years as a systems design engineer, he transferred into selling and later joined the computer industry as a salesman, working with ITT, Honeywell and Digital Equipment Corporation. He also worked as a life insurance salesman for two years "... to have a 'break' from the world of machines and to learn something more about people."

Currently he is employed by DEC as a Senior Sales Training Consultant, concentrating on the applications of minicomputers in science and research. In mid-1977 he moved from England to the United States and now lives in Orlando, Florida.

Hogan's books include Inherit the Stars, The Genesis Machines, The Gentle Giants of Ganymede, The Two Faces of Tomorrow, Element of Uncertainty *and* The Giants' Star.

Who Says It's All Over?

Our galaxy is so vast that light would need a hundred thousand years to cross it, and it contains something like two hundred billion stars. And yet it is just a speck. The best analogy modern cosmology can offer for the universe is that of a "gas" of galaxy "molecules," every one of them not all that much different to our own. And that universe abounds with more energy than we or anybody else could ever know what to do with.

Certainly it imposes no need for philosophies of austerity, shortages and that kind of thing. So when I see our civilization getting bogged down with ideas that it's all over before it's begun and that everything is going to run out tomorrow, I conclude that something has gone wrong down at the level of its basic thinking. When ideas that are manifestly untrue start to take root on a widespread basis there's usually a reason, and the reason in this case, of course, could be that it suits the interests of some influential elements in our society to have us believe that shortages are a permanent fact of life that we must learn to live with. Shortages increase prices, you see. This is hardly an original observation, but nevertheless a large proportion of the country seems to be falling for what, in my opinion, could well qualify as one of the biggest frauds in history. The subject warrants discussion in the Tomorrow column since the way we react to it will play a large part in determining the economic and political future that our children, our grandchildren, and the generations to come after that will grow up in.

A lot of people who mold public opinion (big business these days) are touting the Malthusian specter of a planet with finite resources having to support an exponentially increasing population until Nature imposes limits through its traditional agencies of famine, disease and poverty. According to the Malthusian model the only alternative to naturally imposed limits is artificially imposed ones, which means simpler living, a curb on industrialization, and a drastic curtailment of energy consumption. Anyone who accepts the validity of this model will rationalize a stance against any kind of continued growth on the basis that it will only result in more people than we can support comfortably, and hasten the day when everything runs out.

I don't accept any of this. To apply observations drawn from freely breeding animal species to human society is to deny the human qualities that set us apart from animals. Unlike animals, who simply consume resources and behave reactively in a manner dictated by their environment, human beings are capable of *creating* wealth (real wealth that equates to better living standards, education and opportunity—not merely consumer junk) and modifying their behavior to suit the new conditions which they bring about. We only have to look at places like North America and Europe to see that when a human population reaches a sufficiently advanced level of well-being and security, it becomes *self-limiting* in numbers. Moral standards, social customs, individual aspirations and so forth change to provide new mechanisms for limiting growth that do not operate in animal populations, and which Malthus never talked about.

The Third World nations have not reached such a level, and again the reason has to do with basic economics. In backward, agricultural, labor-intensive societies, people are an asset—the major source of energy and therefore wealth. To somebody who does not have life insurance, social security, a retirement pension or machines, the short-term difficulties of raising a family are more than offset by the longer-term salvation of having a strong son or two to run the farm when old age or disability sets in. And with high infant mortality, all kinds of hazards lying in wait between birth and adulthood, and half the offspring not being sons, big families make good economic sense. You can preach birth control and nail posters up round the village as much as you want, but while those facts remain you're not going to change anything very much. So we can leave them to be limited by the scourges that have plagued humankind throughout history, or we can do something about helping them get up to our level and allow human, not animal, limiting factors to take effect. Malthus would say that's a nice thought but the resources simply don't exist to do it. I say the resources do exist.

Periodically civilization goes through something analogous to the phase changes in physics that govern the transitions between solids, liquids and gases, in which the old limits cease to mean anything and completely new laws come into play. These economic "phase changes" are triggered by break-

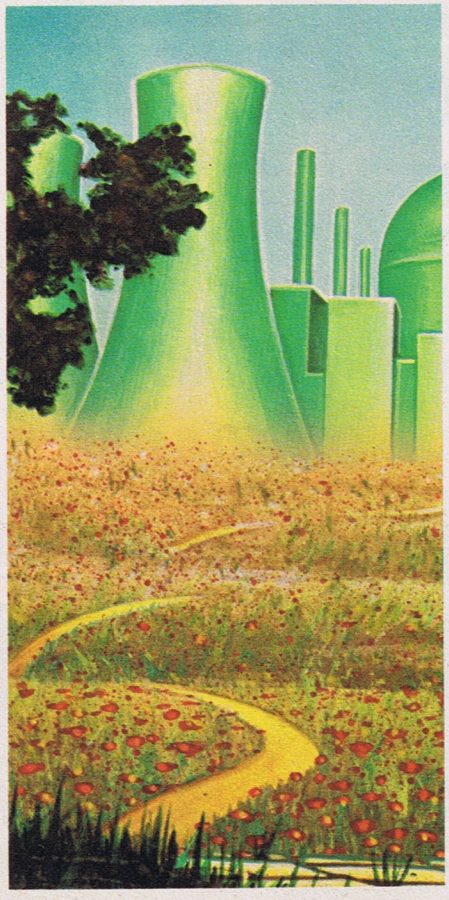

Shaw 80

throughs into totally new, qualitatively distinct realms of energy control and access to new resources that are not simple extrapolations of what went before. The technology that predominates during a given phase of the process might depend on a resource that is undeniably finite, but the point that seems to be missed too often is that the finiteness is *relevant* only within the context of that technology and the economic doctrines based on it. Thus the fact that muscle power, slaves, horses and wood all limited the extent to which earlier economies could be stretched isn't something we worry about in today's world. The same applies to the finite resources that a lot of people are getting hysterical about.

If the world allows itself to believe the myth that we are approaching the end of the road, the risk of squabbles over shares of the supposedly finite cake escalating to global and nuclear dimensions rises to a virtual certainty. The weapons to fight such a war exist, and they won't go away. What can be eradicated, however, is the motivation for anybody to start it, which means believing that the human race possesses the inventive and creative abilities to meet its needs and solve its problems without having to squander its efforts in gearing up for a course of action guaranteed to solve nothing and make the situation worse instead of better. Hence bringing the rest of the world up to our level becomes not only a desirable goal for humanitarian reasons but offers the only sure way of defusing the tensions likely to lead eventually to the calamity that nobody wants.

This does not mean using the developing nations as dumping ground for products (which consume income—to buy, to maintain and to replace) and captive sources of cheap raw materials. It means making available the know-how for them to establish their own *wealth-creating* industries, and extending the necessary credit for them to become established since the world of today does not offer the same opportunities to accumulate capital by buying low and selling high as were enjoyed by the West's entrepreneurs of centuries gone by. With the Third World able to pay off that credit with the returns from its increased productivity and the West in a position to offer advanced technologies such as computers, aerospace, nuclear engineering and later fusion, the basis surely exists for a healthy long-term trading relationship that is infinitely preferable to war. Yet our restrictive international monetary policies seem designed to keep them locked into the Middle Ages without being able to get off the ground. They would become potential competitors in many areas, of course. Having, say, 50 Japans around could work wonders with prices, but it would cause heart attacks in the boardrooms of quite a few "oligopoly" corporations and commodity cartels. Just a thought.

It suits the interests of some influential elements in our society to have us believe that shortages are a fact of life that we must learn to live with.



When this need is translated into energy requirements, the demand implied is utterly beyond any tinkering around with variants of the sources we already have. Only a breakthrough into a new realm of energy yields—another "phase change," capable of supporting an advanced lifestyle world-wide—can provide the solution. That's why I'm unreservedly in favor of nuclear. Nuclear reactions provide yields that are orders of magnitude greater than anything attainable from rupturing chemical bonds, or from solar, and thus represent such a breakthrough. The so-called "alternatives" do not.

We see a lot of figures showing how much energy could be obtained from this source or that source, such as all the chicken dung dropped on Oklahoma in a year or all the trash collected in Manhattan. This is all very nice, but it only tells half the story. Simple arithmetic will show you how much wood you'd need to burn to release the energy required to lift 300 people across the Atlantic. Now try building a wood-burning 747. It won't work. You need jet fuel. It's the energy *density* of the process, as well as the amount, that matters if you want to do smarter and better things more efficiently. The densities of nuclear reactions can be billions of times higher than those of conventional methods, opening up whole new realms of possibilities for compacting industry and limiting its spread over real estate, just as the harnessing of oil and electricity avoided covering the whole country with coal-mines and steam engines as would have been necessary to support today's level of productivity with yesterday's methods.

For example, at the temperatures of nuclear plasmas all substances break down into raw, highly charged atomic nuclei and can therefore be separated magnetically, very easily and at low cost. Hence we can extract trace metals and other substances from desert sand, all kinds of rock, or construction debris without needing geologically concentrated ores to make it worthwhile, and make obsolete our existing cumbersome and expensive primary-metals industries; also we have a total recycling method for all forms of waste. Further-

more, once such a technology is perfected here we can take it to the Moon, and that's how we build our space colonies, and one day our starships. Who says it's all over?

Given cheap desalination of seawater via nuclear process-heat, we could feed everybody adequately once and for all by irrigating dust bowls, deserts and currently useless land, and with a stabilized global population there's no reason at all why more than enough wilderness shouldn't exist for recreation and adventure. And at the temperatures of nuclear plasmas water "cracks" thermally to afford an inexhaustible source of hydrogen as a base for a whole range of synthetic substitutes to replace oil. Oil is only hydrogen, carbon and locked-up energy when all's said and done; if some microbes floating around in the oceans millions of years ago were able to figure out how to put the package together, I'm sure we can do at least as well.

Perhaps if we had nuclear reactors as our prime power source and cheap synthetic fuels being supplied from fusion-driven generating-steelmaking-desalinating-chemicals complexes, it wouldn't be worth drilling natural oil out of the ground any more. I certainly think that could happen long before fossil fuels run out, which is another example of the finiteness of a resource becoming irrelevant in the new technological context of a new economy. But that would be bad news for a lot of institutions with heavy investments in conventional methods and fossil fuels, wouldn't it?

The oil lobby is the most powerful in Washington, and for a number of years the oil companies have been quietly buying up surface mining rights over an area of something like 250,000 square miles stretching from North Dakota to New Mexico, that contains some of the richest deposits of coal ever discovered—in some cases for as little as $1 an acre from various state and federal agencies. The strip mining rights alone (environmentalists—are you listening?) cover an estimated 30 billion tons, which is as much as the entire nation has produced since coal first came into use in 1702. And, very conveniently, the Administration backs off from the "nuclear independence" program launched in the early '70s by Nixon, stops development of the Clinch River breeder reactor, manufactures a nuclear waste problem needlessly by denying the industry the reprocessing facilities assumed by the designs, and uses Three Mile Island as a pretext to suspend all further plant licensing (and there were, and still are, a lot of fishy aspects to that episode); meanwhile the media seem to be pursuing a systematic campaign of manipulating public opinion against nuclear energy. Oh, I know that there are plenty of published reports from various foundations, "think-tanks," study groups, and so on to provide ammunition for the anti-nuclear movement by telling us that "big is bad," there are "limits to growth," and that nuclear power is fraught with all kinds of risks and hazards that people like the French, the Soviets, the Indians, the Swedes, and a whole list of other countries who are going flat-out for nuclear seem less perturbed about. Now take a long hard look at who funds the foundations, the think-tanks, and the study groups; you'll find a lot of organizations who are very preoccupied indeed with sustaining growth, but not the kind of global growth and full realization of the potential of the human species that I'm talking about. And now we're told that because nuclear is bad, coal will be the "solution" for tomorrow, and the way to achieve oil independence is through coal-liquefaction and coal-based synthetics. Surprise, surprise! Who's pulling whose what?

I would like to see the world of tomorrow meet its needs for energy and production with more freedom for individuals to realize their potentials.

For my money nuclear is the safest, cleanest and most dependable energy source we've so far discovered, or will ever need for the rest of the lifetime of the universe, possibly, once we get into fusion. To see why, consider this: If the potential energy yield of all the deuterium (fusion fuel) in the world's oceans is represented by the distance from New York to San Francisco, then on that same scale the available yield from the entire proven oil reserve of Saudi Arabia measures just six thousandths of one inch! But how can you restrict an unlimited source that washes against everybody's shores, and which you can't buy in the first place to sell at a price to a world that thinks it's got shortages? You can't. And there, in my submission, is the crux of what the whole business is really all about.

Like our anti-nuclear, environmentalist bretheren, I would like to see the world of tomorrow meet its needs for energy and production with minimal risks, less pollution, controls on profiteering, and more freedom for individuals to realize their potentials. Where I differ, obviously, is in seeing a lot of the adverse nuclear publicity being circulated today as a result of a carefully orchestrated system of vested-interest propaganda. I respectfully suggest that perhaps they're allowing themselves to be duped into shooting at the wrong target.

Starhunt

(continued from page 36)

very myopic in their SF vision. "The project as packaged right now is an intelligent drama that is set in the future," Grayson says. "It's as thought-provoking as a good SF book. One of the aspects that I find fascinating is that the people who are fighting this war are fighting, in part, because of imperfect technology. The computer that controls the *Burlingame* is not properly interfaced. There's a ghost on the radar that may or may not be an enemy ship. It could be their own shadow. They could blow themselves up by attacking it. That translates very well to film.

"Part of the suspense also lies in the fact that the humans cannot trust the technology aboard to fight their battles for them. They have to face up to the fact that they have to actively participate in their fates."

Grayson pauses a moment. "Initially we thought everyone would see what a strong film this was, but . . ."

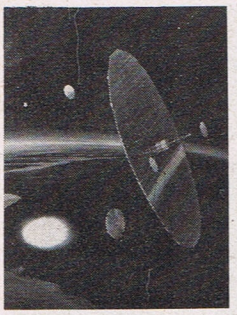
He suddenly shifts to optimistic gear. "This company has only existed since January. I've never been in any business that didn't take two years to operate successfully. We've already closed a deal on a horror movie called *Nightmare Manor* so we're not doing too badly. *Starhunt* will just take a little longer to launch than we originally envisioned."

Line producer Nelson enters the conversation once again, summing up the *Starhunt* experience in an enthusiastic nutshell. "What we're really trying to do," he explains, "is straddle the line between what is commercially viable as far as distributors and Hollywood are concerned and what science fiction fans would like to see in a motion pictue. I think that sometimes those concepts are worlds apart. We're trying to pull them closer together. We want to show the commercially oriented film world that you can put drama and true-to-life situations in a science fiction property, produce it for a reasonable cost and still make it a marketable film. I'm sure that by the time we're done with this, we'll wind up making some concessions, like have the ships make sounds in space. But we still want to try to depict the relationship between futuristic humans and technology as accurately as possible."

He relaxes in his office across from Grayston; two men in a small production company with big ideas. "We're trying to put literature on the screen, really. That's all."

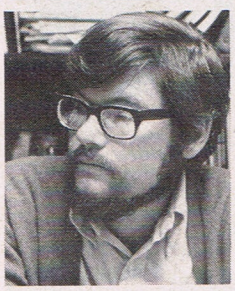
That's all?

next issue



SOLARIS

In the ongoing controversy over which new energy sources to exploit, the sun is becoming more and more popular. But how do we get the best and most efficient use of solar rays? In the next issue, writer Stan Kent examines Solaris, a proposed system of orbiting mirrors designed to reflect sunlight continuously to ground stations for conversion to electricity. Could Solaris be our best chance for complete energy independence?



BENFORD INTERVIEW

Greg Benford is a man of many talents. He is the author of such well-known science fiction novels as *In the Ocean of Night* and *Timescape*. He is a professor of physics at the University of California/Irvine, and responsible for over 60 scientific papers and articles. He is also a very interesting person. Next issue, FUTURE LIFE examines the phenomenon of Dr. Gregory Benford.

SYN FUEL

The recent Congressional approval of the controversial Synthetic Fuels Corporation is being hailed by some as the answer to our continuing energy demands. Next month FUTURE LIFE will dissect the topic to see just what "syn fuels" are and how they work. Is coal gasification a plausible alternative? Will sources like geothermal and solar play a major role in energizing America? How will all this affect our environment, our economy—our lives—in the future?

PHOTO: BOB PENN

HOT "FLASH"

Two years in the making . . . helmed by impresario Dino De Laurentiis . . . starring a virtual unknown . . . a comic book hero comes to the big screen . . . it's *Flash Gordon*! Media observer Ed Naha explores the making of *Flash* through a series of interviews with the principals and behind-the-scenes coverage. He'll trace the film's production, elucidate on the dazzling special effects and describe how the otherworldly sets were constructed.

PLUS

An investigation into cryonics and how some people were getting burned . . . A visit with avant-garde composer John Hassle . . . Fantastic art from Kevin Ward and John Allison . . . A special effects preview of a modern Jekyll and Hyde tale, *Altered States* . . . plus Harlan Ellison, Alternate Space and Earth Control views, book reviews and Databank news.

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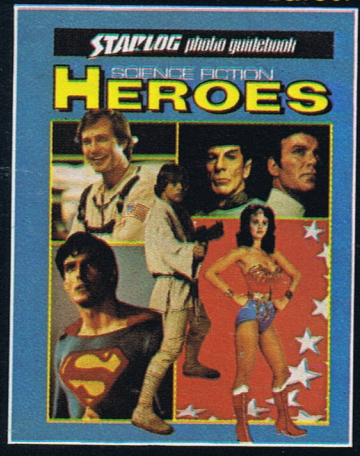

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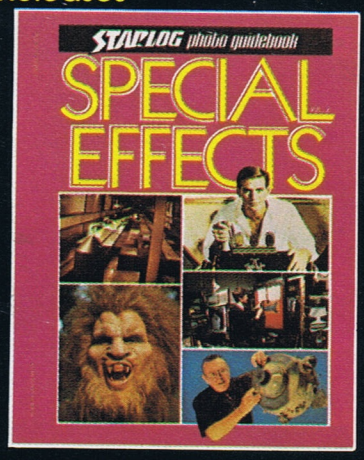

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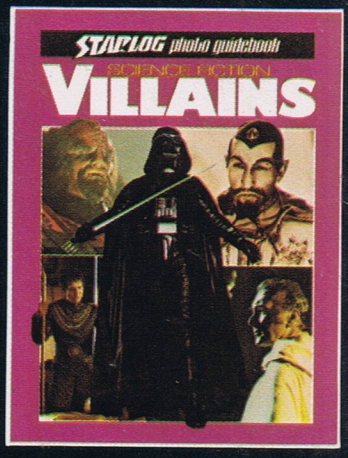

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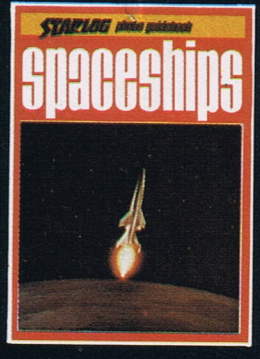

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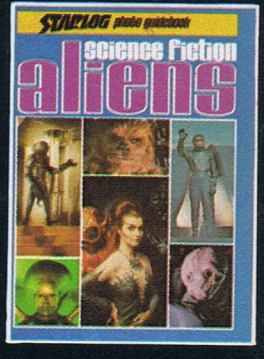

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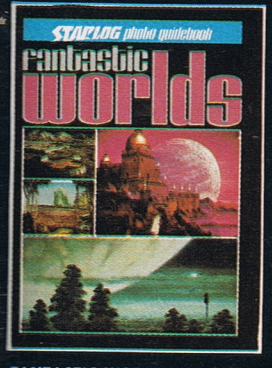

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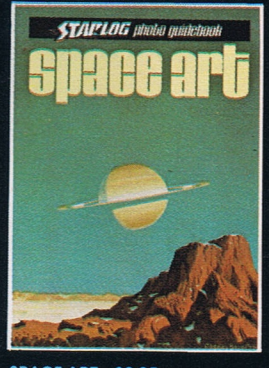

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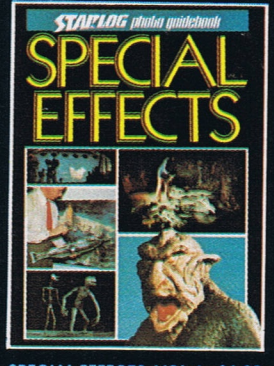

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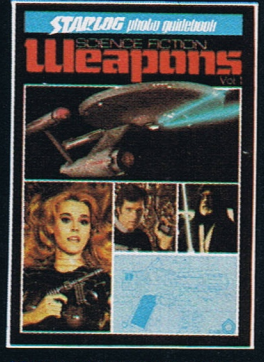

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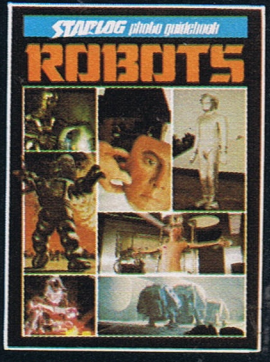

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